OCTOBER 27, 1952 NEWS ISSUE

Electrical World

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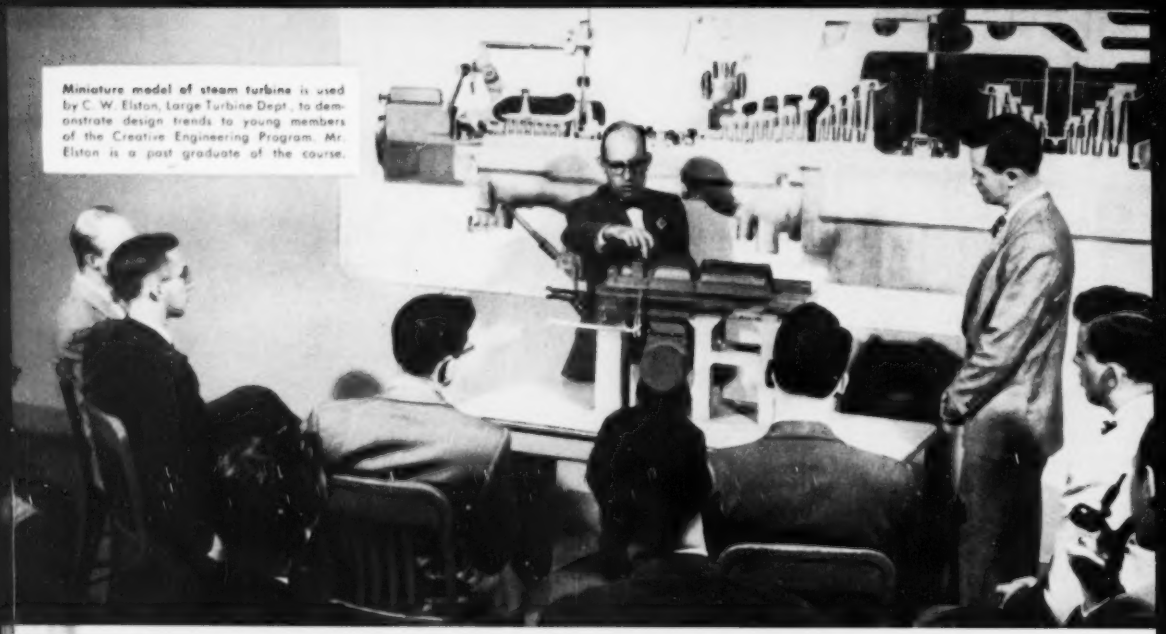
Ralph B. Hubbard: Man from the Rockies Heads IAEL . . . Page 29

Purchasing Is but One of His Jobs . . . Page 22

Industrial Production Zooming . . . Page 50



Miniature model of steam turbine is used by C. W. Elston, Large Turbine Dept., to demonstrate design trends to young members of the Creative Engineering Program. Mr. Elston is a past graduate of the course.

"CREATIVE ENGINEERING" PROGRAM spurs new advances in electrical equipment

Learning the practical as well as the theoretical is an important requirement for all members of the Creative Engineering Program. Above, engineers W. G. Holt, P. J. Binder and H. T. Voum discuss with lathe operator T. I. Shattuck the problems of translating engineering designs into the finished rotor for a large turbine.

2-year G-E course develops new engineering talent in practical search for improved products—lower costs.

One of the most effective ways to insure the continued progress of the electrical industry is by encouraging the development of talented, creative young engineers.

A practical approach that has already demonstrated its value at General Electric is the unique G-E Creative Engineering Program.

For several years past, promising young engineers, carefully chosen from the Test Course for their marked ability to contribute sound and original ideas, have been given the opportunity to take part in a special 2-year educational program. Training is specifically directed towards the development of inventive talent and the creation of new or improved apparatus.

Practical results of the program are the many fresh and original minds now working on G-E engineering problems and the contribution of several notable advances in G-E equipment. The achievements of some graduates have won for them G.E.'s highest recognition—the coveted Coffin Award.

A comprehensive outline of the program is available on request. Write for APD-97, General Electric Company, Schenectady 5, N. Y. 501-212

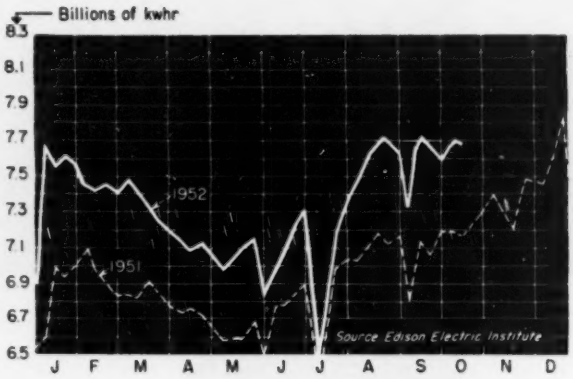
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 138, NO. 17

October 27, 1952

Electrical World



Output Week Ended Oct. 18—7,681,332,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Oct. 18	+7.4	+7.7	+5.4	+8.7	+9.7	+10.8	+7.1	+8.9	−6.1	+10.4
Oct. 11	+7.5	+10.6	+5.3	+7.3	+8.6	+11.2	+7.9	+9.4	−3.3	+10.2
Oct. 4	+7.1	+7.8	+4.4	+6.7	+7.8	+10.8	+7.4	+11.1	−2.0	+11.3

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	July	67.2	67.0	63.1
Capacity (Million Kw)	Aug.	78.31	77.96	73.62
Production (Billion Kwhr)	Aug.	34.36	32.52	32.40
Hydro		8.52	8.74	7.82
Fuel		25.84	23.78	24.51
Fuel Consumption				
Coal (Million Tons)	Aug.	8.57	7.90	8.96
Oil (Million Barrels)		5.38	4.38	5.12
Gas (Billion Cu Ft)		104.97	98.71	88.46
Sales (Billion Kwhr)	July	27.70	27.67	26.50
Residential		7.50	7.44	6.55
Commercial		5.30	5.00	4.70
Industrial		12.64	13.20	13.13
Other		2.25	2.03	2.12
Net Income Class A & B Companies ($ Million)	Aug.	68.67	64.62	53.33
Estimated Dec. 52 Peak (Million Kw)	July	80.1	80.0	78.8
Kwhr per Residential Customer (12 Month Average)	July	2,104	2,091	1,933
Revenue per Kwhr Residential Service (12 Month Average)	July	2.78¢	2.78¢	2.84¢
Canadian Production (Billion Kwhr)	July	4.84	4.99	4.63

Business Statistics

FRB Industrial Production Index†††	Sept.	228	218	223
Gross National Product Annual Rate ($ Billion)	3rdQtr.	344.0	343.2	337.1
E. W. 5 Industry Production Index	Sept.	123.5	120.5	123.5
ENR Construction Cost Index††	Oct.	123.3	122.9	114.6
BLS Consumer's Price Index	Aug.	191.1	190.8	185.5
NEMA Insulation Materials Sales Index†	Aug.	451	470	539
NEMA Electric Appliance Sales Index†	Aug.	236	234	210
NEMA Household Refrig. Sales Index†	Aug.	148	197	97

* Estimated. † 1936=100 †† 1949=100 ††† 1937-39=100 (Unadjusted)

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NEW SG-4

115 Kv, two-pole high speed grounding switch mounted in the upright position. Blades are in the open position. Contacts will close within 15 cycles after the release coil is energized.

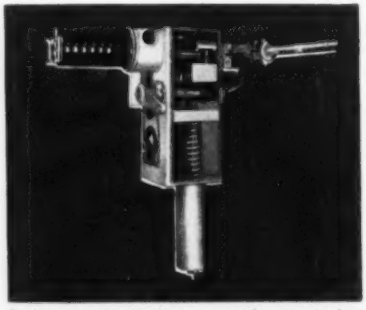
KEEP TRANSFORMER DAMAGE TO A MINIMUM by high speed grounding of line. The "SG-4" single-pole switch will close in 15 cycles after relays detect transformer fault. Slightly longer for multi-pole operation.

ELIMINATE EXPENSIVE PILOT WIRE OR CARRIER CURRENT EQUIPMENT to remote breaker. By grounding line, high speed relays at remote location can detect fault and trip breakers.

SIMPLE TO INSTALL. UNIT DESIGN MAKES INSTALLATION EASY. "SG-4" grounding switches are positive in action and are easily reset to open position either manually or automatically.

Aluminum blades have silver faced copper tips. When blades close, tips make high pressure contact with long contact shoe at top of insulator stack. Absorbers at both ends of blade prevent contact bounce and minimize shock on blade and insulator stack. Spring mechanism has sealed and permanently lubricated ball bearings on main shaft, needle bearings in low temperature grease on driving shaft and rollers. All links and levers are completely enclosed . . . all parts exposed to weather are bronze, aluminum or hot-dip galvanized steel.

Consult the Factory or Nearest District Office for Complete Information



The inspection plate has been removed from the trip-free operating mechanism of the "SG-4" to show the interior.

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THE ELECTRICAL WEEK

The Issue's News Highlights—Ohio Valley Electric Corp signs contract with Atomic Energy Commission to supply 1.8 million kw from two stations to AEC's Pike County, Ohio, plant.

Walker L. Cisler says Detroit Edison-Dow Chemical group studying atomic generation is now at work on technology for a full-scale experimental nuclear power plant.

Interior Department takes its Roanoke Rapids case to Supreme Court, asking that FPC license granted Virginia Electric & Power Co for dam on Roanoke River be invalidated.

Off the Washington Wire — Comptroller General Lindsay Warren, Congressional watchdog over the federal treasury, has been asked to take a look at another Interior Department transaction. It involves release of some $844,000 to begin construction of the Clark Hill-Greenwood transmission line in South Carolina.

Southeastern Power Administration is reported to be seeking a much higher appropriation than in the past to begin its federal transmission network in the southern states . . . FPC has postponed the Oxbow project hearings from Nov. 17 to Jan. 12.

International Joint Commission held final hearings in Washington last week on the St. Lawrence project. Indications are that the commission will act this year to clear the way for construction of the U. S. and Canadian power projects, which are vital parts of the proposed seaway development.

From New England—Mayor Hynes of Boston is conferring with Boston Edison officials on increasing street lighting in downtown shopping center to facilitate parking on evenings when stores are open.

From Southeast—Miami, Fla., City Commissioner Perrine Palmer, Jr. asks city to study possibility of owning the power and bus systems. "I am not advocating municipal ownership at this time," he said, "but I do think it should be explored seriously to determine whether it would be practical and feasible in Miami."

From the Far West—To meet the regional power shortage, Seattle City Light begins operation of its Georgetown steam plant on a 16-hour-a-day basis . . . Pacific G&E has signed a contract with North American weather consultants of Pasadena, Calif., to "cloud-seed" over the Mokelume and Stanislaus watersheds in central Sierra-Nevada range. The carefully controlled program, from ground-situated smoke-generators burning a silver iodine solution, may start by December if precipitation is deficient. The two watersheds can store 590,000 acre ft of water in 17 reservoirs and have 10 power houses with total capacity of 290,000 kw.

In a survey of 132 engineering schools, J. D. Ryder, University of Illinois, reported that it showed that 26% of the students are taking the power option and 74% electronics and communications option. Recruiters are hiring electronic engineers at the rate of about six times (upwards of 20 per day compared with 3.5) as fast as power option engineers.

County Pomona Grange, Bellingham, Wash., has commended the Whatcom Public Utility District for refusing to join six other PUD's in joint purchase of Puget P&L properties.

Financial—Ontario Hydro-Electric Commission plans to sell $35 million 4¼% (compared with 4% on previous issues) 15-year debentures at par . . . City of Shelby, Ohio, plans to issue $1,797,000 in mortgage revenue bonds for its expansion program.

Labor—Hawaiian Electric and IBEW-AFL agree to 10¢ an hour wage increase with 3¢ subject to WSB approval . . . Pacific G&E gets WSB approval to give 6.3% wage boost for workers of IBEW-AFL and S. F. Area Group of Professional Employees, an independent union. A 4.7% boost has become effective as of April 1 and remaining 1.6% on July 1 . . . Duquesne Light and IBEW-AFL agree to 6¼% wage increase, retroactive to Oct 1. It is subject to WSB approval.

Litigation—Kentucky Court of Appeals reaffirms its ruling made on June 6 that Middlesboro must try to buy Kentucky Utilities' property in that city before going into the electric business.

Rates—New Jersey P&L ask Board of Public Utility Commissioners approval to up rates $1.4 million a year.

Safety—With an injury index 80.88% below the national average Washington Water Power will receive this year's Ebasco Gold Award given annually to Ebasco Services client company showing the greatest reduction in accident frequency for electric utility industry.

British Columbia Labor Relations Board has refused the professional engineers employed by British Columbia Electric permission to break away from a union representing 1,200 office workers. The board ruled that they were bound to dual membership with the BCE Office Employees Association and the Professional Engineers Association of British Columbia which they had to join under the province's law.

Congratulations—Ebasco Services Inc elects F. C. Gardner executive vice president and K. W. Reece vice president in charge of engineering and construction. W. H. Colquhoun is appointed engineering manager, succeeding Reece . . . D. R. McClung, Pacific P&L, assumes position of executive vice president and E. Robert de Luccia becomes vice president and chief engineer.

Appalachian Electric Power names G. L. Furr vice president and general manager, succeeding M. C. Funk who will continue as vice president and director and will devote his major attention to general policies.

Obituary—Robert E. Dillon, 68, vice president and assistant to president of Boston Edison Co, died Oct. 17.

IN THE INDUSTRY

First Reactor Plant Plan . . .

. . . is offered by Chicago utility during a week of atomic developments in the power field

A glance at EW's news columns shows this has been a big week for atomic developments in the industry. Here is a run-down:

● The new Ohio Valley Electric Corp signed its first contract with Atomic Energy Commission. This 15-company corporation intends to build two plants on the Ohio River to supply 1.8 million kw to AEC's Pike County (Ohio) gaseous diffusion plant, now a-building (p 7).

● Detroit Edison-Dow Chemical nuclear study group took on ten new teammates to help in Phase 2 of its program: working out the technology for a full-size experimental nuclear power plant (p 9).

● Dr. Lawrence R. Hafstad, AEC's director of reactor development, testified before a Senate subgroup in Nevada that the commission was considering a number of sites for the first commercial atomic power station, and indicated Eureka, Nev., had drawn attention as a possible site (p 15).

● Commonwealth Edison-Public Service of Northern Illinois nuclear study team announced it had a plan to build and operate a dual-purpose (power and plutonium) reactor plant without requiring changes in existing law and without going beyond its proper sphere as a regulated public utility.

First Concrete Proposal . . . It's impossible to assess the relative importance of these developments to the power industry. But the Commonwealth-Public Service proposal is certainly interesting. It is the first to suggest that a private company actually start building a nuclear power reactor.

Under the Atomic Energy Act of 1946, the Chicago utility points out, such a plant could be built only if the government retains title to the reactor and its fuel.

So that the law will not have to be changed, Commonwealth-Public Service suggests AEC pay for and own the reactor proper and provide the nuclear fuel. The utility would pay for and own the conventional power generating facilities. Heat exchangers and other intermediate facilities would be built by the utility with a government grant-in-aid. AEC would dispose of fuel elements after irradiation.

Murray Joslin, assistant to the president of the two Illinois companies, outlined the proposal (which as yet has not been formally presented to AEC) at a special conference on atomic energy in industry sponsored by the National Industrial Conference Board in New York.

"Someone must build and operate a nuclear power plant," he said. "We will never solve the problems by engineering and research alone—we must have actual experience."

The Economics . . . To average costs down and justify the plant economically, a large-scale project will have to be built, he pointed out. Therefore, a large capital expenditure will have to be made. And since, he said, a privately owned utility has no venture capital in the generally accepted sense, some form of government aid seems necessary if the country is to have a going nuclear power reactor under present conditions.

In a cooperative venture, he said, the utility's entire approach would be to give the government the benefit of any saving below the cost of conventional power that might result from construction of the reactor plant. This saving would be applied as a credit against the cost to the government of plutonium produced in the process.

Using arbitrary figures, Joslin offered an example of how this part of the plan would work:

If the value of power put into the utility's system in a given month were $400 and the utility's cost of producing it in the nuclear plant were $300, the utility would pay AEC $100 for that month.

In return the companies ask that their capital investment in the facility be protected against abnormal financial risk in the event the reactor could not be used. (If, for example, no nuclear fuel could be had.)

This could be done by having AEC give Commonwealth-Public Service an adjustable construction grant, Joslin declared.

Should the reactor at any time prove unusable, the grant would permit the utility to convert the plant to a conventional steam station at a cost (including facilities already installed) no greater than that to build a new plant from the ground up.

Defense Installation . . . Joslin pointed out the facility would produce substantial amounts of fissionable material for the military so long as stockpiling continues. After that, he predicted, the station would be a source of income to the government when operated for power alone. The plant would be a valuable national defense installation, he said, because the utility would be committed to go on a military plutonium production schedule whenever called upon.

Whether AEC will accept the Commonwealth-Public Service proposal when it is presented can't be foretold. If it did, the Illinois team would stand a good chance of being the first private group to put a nuclear power plant in commercial operation.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Electric ranges in the absence of metered service would be quite tempting as space heaters.

Flame-spraying bonds polyethylene to metal surfaces fairly successfully, including absence of pin-holes.

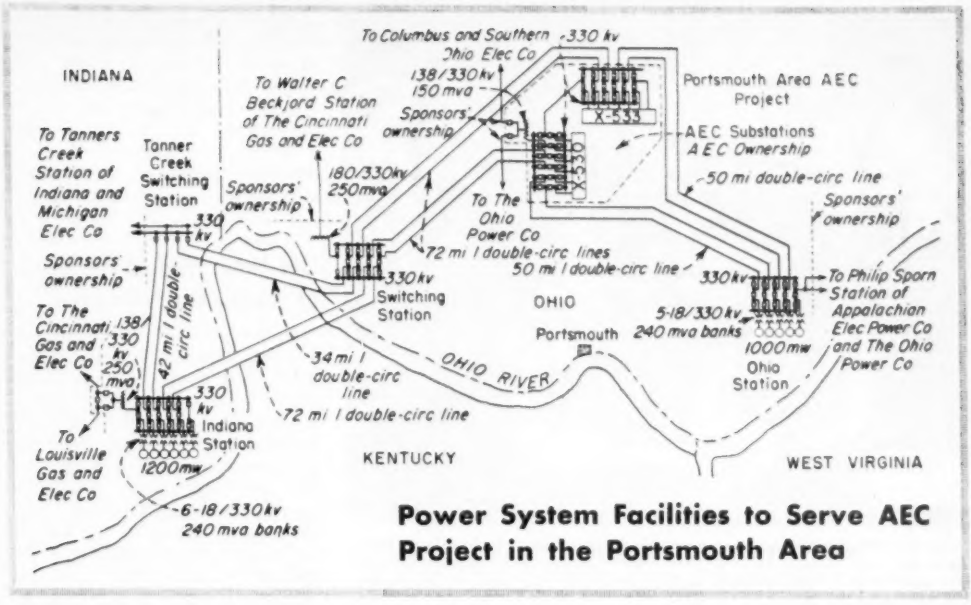
Life of insulation, noise and switch surge likelihood may place a floor under lowering of BIL.

Motors can undoubtedly be built in size up to a half-million horsepower if anybody wants them.

Prelubricated ball bearing motors are being urged up to 150 hp for industrial use.

Microwave communication is essentially a multi-channel function.

Concrete can be rendered light in weight by adding ground-up corn cobs to the mix.



Power System Facilities to Serve AEC Project in the Portsmouth Area

AEC to Get 1,800 Mw from Ohio Valley

New 15-company group headed by Philip Sporn will build two steam plants on Ohio River to supply Portsmouth installation

A contract disposing of the largest block of electric energy ever sold in the history of the world was signed Oct. 15 at Washington. Parties to the contract were the Ohio Valley Electric Corp, a cooperative corporation of 15 investor-owned electric companies, and the Atomic Energy Commission. It is to the gaseous diffusion plant of AEC near Portsmouth, Ohio, that Ohio Valley will deliver 1.8-million kw under a 25-year contract.

The contract is unusual in respects other than the amount of demand. At present Ohio Valley has no power plants. Between now and Nov. 1, 1956 it will build two with a total capability of 2.2-million kw. Ohio Valley has not announced either location, but both will be coal-fueled steam plants on the Ohio River. And the power from these plants will be fed into the AEC project at 330-kv, a voltage as high as any so far planned for any part of the United States.

The Officers . . . Heading Ohio Valley is Philip Sporn, president of American Gas & Electric Co, an advocate of erecting steam plants of large capability close to sources of coal, and a proponent of high-voltage transmission.

Other Ohio Valley officers are Ernest S. Fields, Cincinnati Gas & Electric Co, and H. A. Kammer, American Gas & Electric Service Co, vice presidents; E. W. Wilkinson, West Penn Electric Co, secretary and treasurer; W. J. Rose, AG&E, and W. H. Zimmer, Cincinnati Gas & Electric, assistant secretaries and assistant treasurers.

Sporn is also president of the Indiana-Kentucky Electric Corp, an Ohio Valley subsidiary, which is bound by the parent's contract with AEC. The other officers of Indiana-Kentucky are identical also, except that G. R. Armstrong, Louisville Gas & Electric Co, replaces E. S. Fields as one of the vice presidents.

While the present estimated cost of the power plants and transmission facilities is $400 million, financing has been arranged for a maximum of $440 million. Of this total $360 million will be obtained from the sale of first mortgage bonds to institutional investors, principally insurance companies; $60 million from the sale of unsecured debt to banking institutions; and $20 million from common stock of Ohio Valley to the participating systems.

These systems and the amount of stock for which they will subscribe are as follows:

American Gas & Electric Co	$7,560,000
Ohio Edison Co	3,300,000
West Penn Electric Co	2,500,000
Cincinnati Gas & Electric Co	1,800,000
Louisville Gas & Electric Co	1,400,000
Dayton Power & Light Co	1,020,000
Columbus & Southern Ohio Electric Co	820,000
Toledo Edison Co	800,000
Kentucky Utilities Co	500,000
Southern Indiana Gas & Electric Co	300,000

The subsidiaries of these systems included in the contract are Appalachian Electric Power Co, Indiana & Michigan Electric Co, and Ohio Power Co of American Gas & Electric Co; Monongahela Power Co, West Penn Power Co, and Potomac Edison Co of West Penn Electric Co; and Pennsylvania Power Co of Ohio Edison.

(Continued on next page)

POWER CONTRACT providing for supply of 1.8 million kw of power by Ohio Valley Electric Corp to AEC plant is signed by R. W. Cook (seated left), director of production for AEC. Philip Sporn (seated right), president of Ohio Valley Electric, signed for the company. Other officials of the commission and Ohio Valley were on hand to witness the signing.

SEC Hearings . . . Securities and Exchange Commission has scheduled hearings for Oct. 27, on the transactions involved in creating the two generating and transmission companies.

Under the Public Utility Holding Company Act, SEC must review and approve:

1. The financial arrangements of the new companies.

2. Participation by holding companies and subsidiaries.

3. Participation by other utilities which will acquire more than 5% of the stock of the new companies.

4. Physical integration of the new facilities with the existing facilities of the participating companies.

Early last week there appeared to be no opposition to the applications filed with SEC relating to the establishment of the new companies. Informal discussions have been carried on between SEC and officials of the companies since negotiations with AEC began, and SEC approval of the transactions is almost certain.

AEC's power requirements which Ohio Valley is now bound to supply began on Oct. 1 with 800 kw. A year from now demand will be 22,800 kw. On Oct. 1, 1954, this will rise to 182,000 kw, a year later to 1,025,000 kw, and on Nov. 1, 1956 to the full 1,800,000 kw.

To supply this demand Ohio Valley will build the up-river station on the Ohio River between Portsmouth and Marietta, either in Ohio or West Virginia. This plant will have five turbo-generators with an expected capability of 200,000 kw each. Indiana-Kentucky will build the down-river station on the Ohio River between New Albany and Lawrenceburg, Ind., in either Indiana or Kentucky. This plant will have six turbo-generators with an expected capability of 200,000 kw each.

The first Ohio unit is due on the line on March 1, 1955, the last on April 1, 1956. The first Indiana unit is due on Jan. 1, 1955, the last on June 1, 1956.

High Lines, Too . . . In addition Ohio Valley is obligated to provide transmission facilities to carry the power to the AEC project. This power will be delivered at 330 kv. AEC and Ohio Valley will cooperate to keep the 330-kv voltage within plus or minus 5%. AEC will provide power factor corrective synchronous condenser or other reactive capacity sufficient to correct the net power factor of the load at point of delivery to approximately unity for interim power deliveries and to not less than 94.7% lagging for permanent power deliveries.

The annual costs of power when the two plants are in operation will be an estimated $60 million. Power costs will be based on fixed charges, costs of power generating facilities, operating expenses, and fuel. Ohio Valley is limited to a return on its small amount of capital stock to 8% a year after taxes.

UN Unit Studies Problems of Rural Electrification

Electrification was termed essential to raising living standards in Asia and the Far East by the secretariat of the United Nations Economic Commission for Asia and the Far East. The problem is under study by ECAFE's subcommission on Electric Power.

ECAFE's staff recently prepared a report for the subcommission in which it was noted that except for Taiwan and Japan rural electrification is insignificant in the region. In Japan electricity is available to 97.5% of all towns and villages in the country while in India only .49% of towns with less than 5,000 population have it. All Indian cities with more than 50,000 inhabitants are electrified.

Rural electrification is necessary, the report pointed out, to improve agriculture and industry, make possible decentralization of industry, increase employment, and check the move of rural populations to cities.

ECAFE suggested two main programs, partially financed with UN funds, to promote rural electrification. One is for a group of power experts from the region to visit Japan and the other is for a number of villages in each country to be electrified as demonstration projects to show how power can be applied to every economic use to benefit the population socially and industrially.

More Power for Paducah

Electric Energy, Inc., and the Tennessee Valley Authority will supply an additional 940,000 kw of electric energy to the Atomic Energy Commission's Paducah, Ky., plant. Under an agreement announced Oct. 15 TVA will supply 705,000 kw to bring its committments for the Paducah project to 1,205,000 kw. EEI will supply 235,000 kw to bring its total to 735,000 kw. The pact is for 25 years.

Full-Size Atomic Power Plant Planned

Detroit-Dow group, augmented by ten additional companies, has entered Phase 2 of a 3-phase nuclear program

"We have definite hopes of building a full-size experimental plant as part of the third phase of our study of nuclear power," Walker L. Cisler, president of Detroit Edison Co, told Electrical World last week.

He was speaking for the Detroit Edison-Dow Chemical Co group which has now entered Phase 2 of its study of industrial use of atomic energy under contract with the Atomic Energy Commission.

Phase 2 began last week with the signing of a contract that permits ten additional companies to join the original two in the studies. Phase 1, a one-year study which ended with a report submitted recently to the commission, established that a nuclear power reactor was economically feasible if it also turned out by-products of the fission as well as heat (EW, Aug. 11, p 106).

"Now we're trying to develop the technology for such an experimental reactor," Cisler said. "It would be a high temperature breeder reactor that would produce by-products, including plutonium, for sale to the government."

The group believes its reactor should:

- Use low-cost fuel
- Have a high "breeding" gain
- Be a high temperature machine
- Have an integrated operation to process by-products
- Require a minimum of exclusion area, obtainable at low cost
- Have a simple setup for fuel element fabrication and loading
- Be inherently self-regulating.

One-Year Goal . . . The power company president said he hoped technology for this type reactor could be developed within the next year. How soon after that the team can enter Phase 3—actual construction of the plant—depends on legislative as well as technical considerations. As the Atomic Energy Act stands, private companies are not permitted to own atomic reactors, Cisler pointed out.

"We doubt," he said, "whether the first breeder reactor can be built within the cost of $227 per kilowatt, which earlier was shown to be the maximum investment that can be justified. We believe, however, that this may be possible after initial experience is gained."

He said his group intends to finance construction of the reactor entirely from private sources. This is a different approach from that suggested last week by another industry team, Commonwealth Edison Co-Public Service of Northern Illinois (See In the Industry, p 6). Commonwealth Edison-Public Service proposes that its development be subsidized in part by the federal government.

Step Forward . . . Approval of ten additional companies to cooperate with Detroit Edison-Dow is a step toward the board industry participation in such projects recommended last year by the Sporn Committee (EW, July 2, 1951, p 59). But it falls short of the proposed industry-wide committee which would negotiate and discuss such matters with AEC.

Companies joining the group are: Cincinnati Gas & Electric, Cleveland Electric Illuminating, Consolidated Edison of N. Y., Consumers Power, General Public Utilities Corp; New England Electric System, Philadelphia Electric, Public Service Electric & Gas, Toledo Edison, and Wisconsin Electric Power.

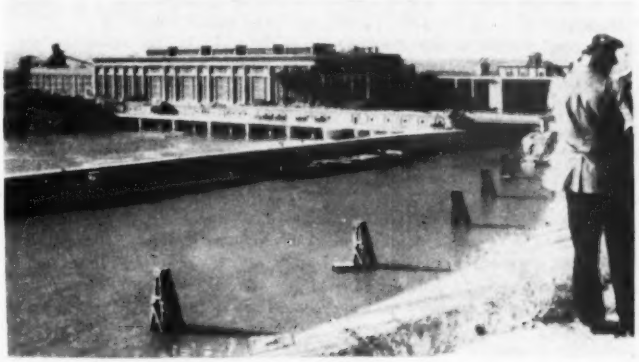
Detroit Edison-Dow estimates second phase studies will cost them $275,000 in direct charges not including overhead. Most of the work will be done in their own laboratories in Michigan. AEC has budgeted $725,000 in direct costs to this investigation.

While the new associates have agreed to help finance the second phase operation, Cisler said, they are not committed to Phase 3 from a financial standpoint.

Send Men . . . The ten companies will send qualified men, most of them already familiar with atomic energy problems, to aid the Detroit Edison-Dow team.

An AEC spokesman said last week the commission in the future may designate or approve other companies to join in this group's studies. Should too many want to join, they may affiliate with other existing study groups or create new groups of their own, the spokesman added.

Beside Detroit Edison-Dow and Commonwealth Edison-Public Service, two other teams have submitted Phase 1 reports to AEC., They are Union Electric Co of Missouri-Monsanto Chemical Co and Pacific Gas & Electric Co-Bechtel Corp.



More Power for France

Western Europe's largest single source of electric power, Donzere Mondragon Hydroelectric System in France, goes into operation the end of this month. The station, shown above, is located at Bollene and utilizes the waters of the Rhone River. The system will produce 2 billion kwhr yearly.

Final Appeal in Roanoke Case

Interior asks Supreme Court to invalidate FPC license granted Virginia Electric & Power to construct hydro project

Following turn-downs at lower levels, Interior Department last week asked the Supreme Court to retrieve the Roanoke Rapids hydroelectric site on the Virginia-North Carolina line for federal development.

If decided on the main issue, the court's opinion may determine to some degree the number of potential hydroelectric sites which are still open to development by electric companies. A decision favorable to Interior would almost certainly reduce the number of such sites.

Arguments Repeated . . . Repeating arguments used before Federal Power Commission and the Fourth Circuit Court of Appeals, Interior's attorney, Gregory Hankin, asked the high court to invalidate a federal license granted Virginia Electric & Power Co to build a 91,000-kw project at the site. Joining in this plea was the Virginia REA Association.

FPC, which had issued the license in January 1951, carried the brunt of the opposition with the aid of Vepco.

Questions . . . Questions before the court:

- Are the Secretary of Interior and the association aggrieved parties that have a standing in court to ask for review of the FPC order?
- Does Section 10 of the 1944 Flood Control Act withdraw the Roanoke Rapids site from FPC's licensing jurisdiction?
- Does a previous FPC approval of the comprehensive plan for Roanoke River basin development preclude the commission for issuing a license to Vepco to develop the site.

The appeals court decision (EW, Oct. 15, 1951, p 5) gave short shift to the Interior argument on each of these questions, concluding that the Interior secretary had no more duty or responsibility in the case than the postmaster general.

In asserting the Interior secretary's responsibility, the Interior brief compared his duties with those of an electric utility sales manager, concerned with growth of his company's system, but on a larger scale.

In reply, FPC said these arguments should be addressed to Congress, not the courts, adding if Congress had intended to build up such a public power system it would have said so.

No Summary Judgment in 'Missouri Case'

A motion by government lawyers to dismiss or make a summary judgment in the "Missouri Case" was put off last week in a U. S. District Court in Washington, D. C.

The motion came Oct. 21 after Kansas City Power & Light Co and nine other electric companies had completed their testimony in the case. Issue is whether Rural Electrification Administration and Southwestern Power Administration had exceeded their legal authority in entering certain contracts with five Missouri generating and transmission cooperatives (EW, Oct. 20, 1952, p 97).

Government testimony was scheduled to begin soon after Judge C. F. McLaughlin had announced he would delay a decision on the motion until the end of the trial.

A parade of electric company witnesses gave expert testimony on the nature of the contracts during the first week of the trial, which began Oct. 13. Purpose of this testimony was to show that the G. & T. cooperatives were "straw men" set up as a way of bypassing Congress in making REA funds available to SPA.

Witnesses testified that the contracts between the co-ops and SPA, by which the agency would lease transmission lines and buy the output of thermal generating plants, were not the usual lease and power purchase contracts entered by utilities. This testimony indicated SPA had demanded certain provisions in the power purchase contracts which tended to put SPA in the position of being the real operator of the generating plants.

Electric company witnesses included: W. L. Porter, vice president, and C. M. Lytle, manager of engineering, both of Kansas City Power & Light Co; Carl J. Mason, vice president of Missouri Public Service Co; R. L. Kiddoo, vice president, Empire District Electric Co; George Stobart, engineer, Missouri Power & Light Co; and D. A. Merrifield, vice president, St. Joseph Light & Power Co.

FPC Backs Interior in Line Case

Federal Power Commission went to bat for Interior Department last week before the Supreme Court in a case involving Idaho Power Co.

Fighting to impose "common carrier" provisions upon an Idaho Power transmission line, FPC in this case sought to have the high court overrule a lower court decision which had declared the conditions illegal.

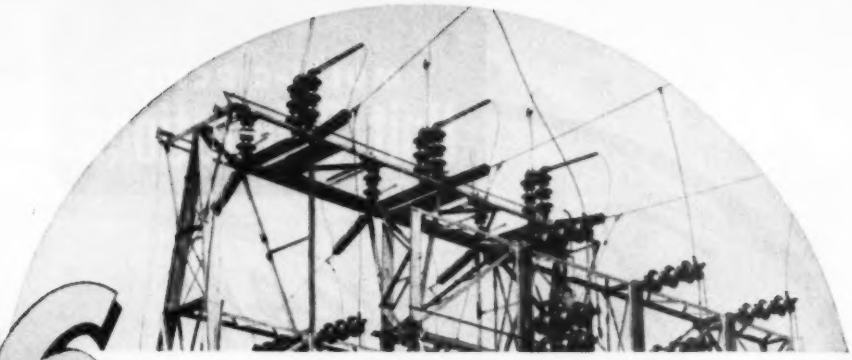
Conditions . . . In a license issued for Idaho Power's Bliss project, FPC had sought to require the company to share its 189-mile American Falls-Boise transmission line with Interior. Attached at the request of Interior secretary, the conditions would provide that Idaho Power increase the capacity of the line at Interior's request; the company permit the government to use any excess capacity; and the company may only withdraw such capacity from government use upon 30 months notice.

The lower court had disallowed each of these conditions and ordered FPC to issue the license without them.

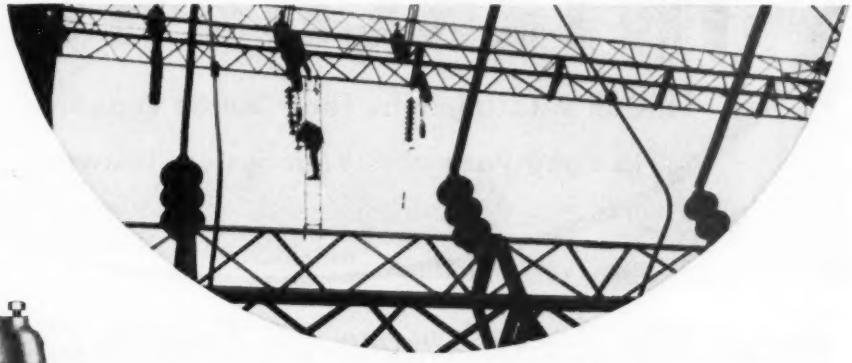
Claims . . . Before the Supreme Court last week, counsel for FPC contended that the lower court should have remanded the matter to the commission for reconsideration, rather than summarily ordering the commission to issue the license without the conditions.

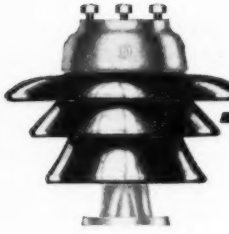
He further argued that the commission had full authority to impose such conditions and the lower court had erred in finding otherwise.

Idaho power attorney contended the matter was not properly before the Supreme Court because the petition for review had been filed too late; the lower court had sufficient precedent for not remanding the case to the FPC; and FPC has no authority to impose such conditions upon an electric company.



26 YEARS APART
on the same system





. . . both insulated with O-B

In the same Midwestern industrial city these two major stations were equipped completely with O-B switch and bus insulators, *26 years but only a few miles apart!* In the intervening time, many others on the same system have been so-constructed. Records on all these stations are available in power company files. With 26 years of facts available--facts collected on that company's own terms--engineers again chose O-B.

How can you be sure your choice of switch and bus insulators, today, will stand every test of time and experience for the next 20 or 30 years? The men who built the stations shown here know the answer. Check the records--the older the better--and then do the logical thing. Specify O-B.

Ohio Brass

MANSFIELD (B) **OHIO, U.S.A.**

4242-H

ALLIS-CHALMERS

MULTI-CIRCUIT

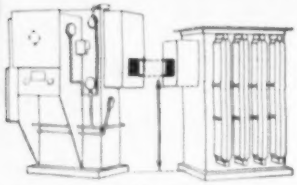
Unit Substations

For Easy

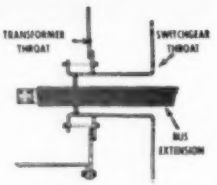
TRANSFORMER INTERCHANGE

Install A-C Unit Subs That Can Be Expanded to Keep Pace with Your System Growth

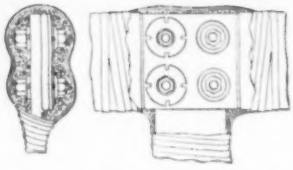
Here's Why Transformers Are Easy to Change



1 **A HIGHER CAPACITY TRANSFORMER** —within the limits of breaker size and bus capacity — can easily replace the installed transformer. Substation design permits one transformer to be replaced by another of larger rating easily and simply in the field.

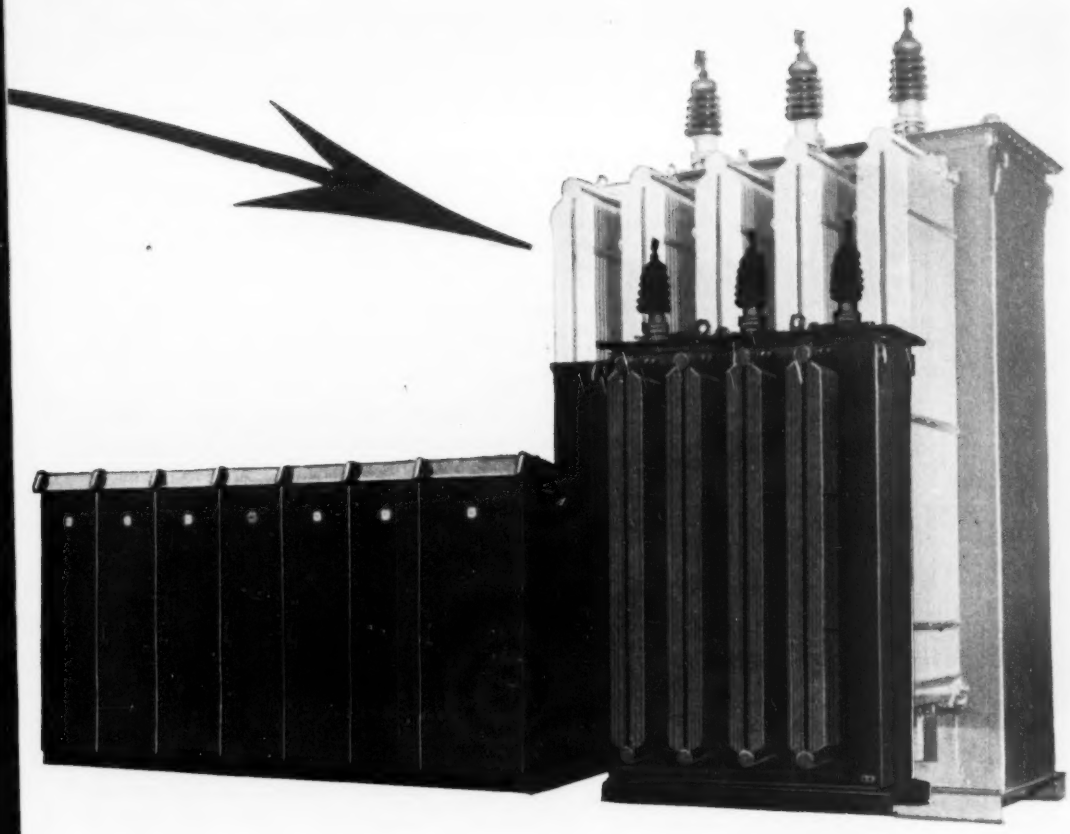


2 **FLEXIBILITY** to meet field conditions is built into the throat construction of Allis-Chalmers Unit Substations. Because of this, mechanical and electrical connections are easy to make. Normal irregularities in concrete surfaces affecting alignment can be tolerated.



3 **BUS JOINTS** are easy to make in the field. Bus extensions are predrilled and silver plated . . . designed for quick, easy bolting together. No-corona tape covers the bolted joint. Insulating tape finishes the joint. There's no compound to melt or apply.

ALLIS-



WHEN LOAD GROWTH demands additional power, the Allis-Chalmers Unit Substation you install today will be easy to modify. The installed transformer will be easy to replace with a new transformer of larger capacity.

Simplified Mechanical Connections Cut Changeover Time

Your service crew will find fewer connections to make — and these at a lower, more convenient level than the connections of most piecemeal substations.

Throat locations have been carefully established so that an Allis-Chalmers substation transformer of any rating can be replaced by a larger one. Bus and throat connections have sufficient flexibility to permit realistic tolerances for pad construction.

The time interval for changeover is further reduced by the use of bolted and taped bus joints to speed up electrical connections. Time is saved because there's no compound to melt, chip, or scrape.

Because Allis-Chalmers Unit Substations are designed to grow with your system, they are a convenient answer to the growing distribution problem . . . to the ever increasing demand for power and yet more power. They are simple to specify, neat and modern in appearance, and easy to expand.

You Save These Five Ways

(1) Original equipment cost is low; (2) compact construction reduces space requirements and real estate costs; (3) pre-wired unit design speeds installation; (4) maintenance is quick and economical because of improved accessibility; and (5) you purchase only the equipment you need *now*, deferring additional expense until load growth demands the expenditure.

For the full story on what Allis-Chalmers Unit Substations can mean in your distribution system, call your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3807

CHALMERS

A-C ALLIS-CHALMERS

THESE ARE RECTANGULAR BUSHINGS

These porcelain bushings are used to insulate rectangular busses from walls or barriers through which they pass.

With modernization of design of power plants, need for such bushings has, over the years, become gradually less. Nevertheless they are in continuous production at Lapp—and have been through our 35-year history. While they no longer pose a serious production problem to Lapp, there was a time when Lapp alone would willingly undertake their manufacture.

The problem, of course, is in the rectangular shape, which in drying and firing sets up strain patterns far different from those of round pieces. In this one type of piece is demonstrated almost every challenge of electrical porcelain production . . . uniformity of body . . . freedom from cracking in drying and firing . . . strength to withstand shrinkage forces as the piece is drying and is being fired . . . electrical security under Lapp's severe testing routine.

If you are a user of rectangular bushings, you probably know the performance record of these pieces of Lapp porcelain. If you are not, you should be interested in the knowledge, skills and techniques which make production of difficult pieces look easy at Lapp. They are reflected in the extra margin of operating security built into every piece of Lapp porcelain . . . in high voltage insulators . . . in special porcelain parts for electrical equipment. Although *you can buy cheaper porcelain . . . you can't buy better porcelain . . .* than Lapp.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

Picking Atom Power Plant Site

AEC expert cites four factors involved in choosing location of what may be first commercial nuclear energy plant

There are at least four factors involved in choosing a location for what could be the world's first commercial atomic energy power plant, according to Dr Lawrence R. Hafstad, director of reactor development for the Atomic Energy Commission. He made the statement Oct. 13 during a U. S. subcommittee special hearing presided over by Senator George W. Malone, a member of the committee on public works.

Lists Factors . . . The four factors, Hafstad said, are (1) price of electric power which could be sold, (2) the construction cost index, (3) availability of cooling water, and (4) strategic safety in the event of enemy attack.

"All factors must be weighed carefully and when the AEC gets all the information it wants, its engineers will make final decision as to location," he declared.

In this respect, Hafstad admitted that a site near Eureka, Nev., appeared to be "high on the list" of possible locations.

He added: "The Eureka area comes very close to meeting our requirements."

Pressed for an answer as to what other locations were under consideration, Hafstad said he was not permitted to answer.

"But judge for yourselves," he said. "Pick out the areas where power costs are high and that excludes coal and oil bearing regions."

Commercial Possibilities . . . As for the ultimate commercial energy possibilities of such a reactor, they are enormous, Hafstad said. He pointed out that one lb of fissionable uranium metal produced as much energy as 1,300 tons of coal.

Or, one lb of the ore could get the same energy results as 1,300 tons of fuel oil.

He said, in using the Eureka areas as an example, that it would be much cheaper to truck in a pound of uranium ore than to haul diesel fuel from long distances.

And the atomic expert implied that atomic produced energy in the mining industry might cut in half the present cost of producing power with diesel units.

Hafstad commended the Nevada atomic power utilization committee, headed by A. M. (Tom) Smith, former state engineer and now administrative assistant to Senator Malone. It was the Nevada junior senator who urged the AEC to consider the Eureka site as a possible reactor location and it was he who was instrumental in forming the utilization committee.

Because more information has been given the AEC about the Eureka site, it is far ahead of any other site insofar as detailed studies are concerned, Hafstad said.

Albeni Falls Suit Dismissed

An action seeking to halt impounding of waters behind newly constructed Albeni Falls Dam near the border between Idaho and Washington has been dismissed by Federal Judge Chase Clark at Coeur D'Alene, Idaho. The action had been brought by the City of Sandpoint, Idaho, against the Corps of Engineers. The city charged that rising waters had resulted in the general disruption of the entire city sewage-disposal facilities.

B-29 Crash Brings Death and Darkness in Oregon

A crashing B-29 severed transmission lines near Wilsonville, Ore., recently, causing a power blackout in a large rural area. Eleven Air Force men were killed in the crash but two Portland General Electric Co linemen working nearby escaped injury.

Lineman Durell Belanger (picture at right) shows where he was standing when the B-29 plunged to the ground. He and Norman Beachy were stringing a 12.5-kv line for a new circuit when the plane exploded overhead. Belanger ran and Beachy dived under a utility truck. Fragments of the B-29 struck all around them. The debris hit a 57-kv line in addition to the new line. Both lines were ripped off the poles and entangled in the wreckage.

Service to several hundred customers was interrupted for three to four hours in the vicinity of the crash. Emergency crews worked into the night to restore power.

MIAMI, Florida's largest city, is becoming a city of skyscrapers. It is an important port and air center for travel between U. S. and Latin American countries. The tourist trade and new industries are rapidly pushing the population of Greater Miami area toward the million mark

Florida P&L Is Keeping Pace with

$332-million, 10-year program will triple capacity. Smart merchandising is boosting power and appliance sales

In the next ten years Florida expects to be virtually "bustin' at the seams" with people. A 50% increase is expected to drive population over the 4-million mark by 1962.

Much of this increase is expected in the area served by the Florida Power & Light Co. And in Miami, where the company has its headquarters, and in its environs population seems certain to reach the million-mark.

To make it possible for these people to enjoy electrical living, the company is growing as fast as Florida oranges, only at much greater cost. It now has a $332-million expansion program to just about triple its present generating capacity of 503,000 kw to 1,405,000 kw in ten years. Ten units, ranging from 51,000 kw to 135,000 kw will be installed. Some will go into new plants and others into additions to present ones. This ten-year program is on top of the company's $112-million postwar expansion program which added about 290,000 kw.

FP&L is also setting some "firsts" for the state. Cutler Station is the first to have a 75,000-kw unit, the first to reach 155,000 kw capacity, and the first to produce steam at 1,550 psi.

This isn't "big stuff" in industrial and heavy population areas in other parts of the country. But for Florida it indicates more industry and more people. Both are getting a hearty welcome.

At present the company is serving 378,000 customers in 350 communities. This is about two thirds of the state. It has 10,471 miles of transmission and distribution lines. In the past six years the company has constructed 2,768 miles of lines in rural areas. This is a major contribution to a state which

THE AREA FP&L SERVES is brought out in this map. Most of the dark area at the upper left is served by the Florida Power Corp. Blank area at toe is the still uninhabited Everglades

Florida's Rapid Growth

is largely agricultural. About 80% of the farms in the state are electrified.

The rapid expansion of FP&L in recent years has been greatly stimulated by smart merchandising. The cooperative program with appliance dealers and distributors has produced startling results. As an example in June dealer sales hit $5,620,000, up 40% over a year ago. For the first six months of this year sales were up 31% to $22,370,000. These sales averaged $70.21 per residential customer against $59.60 in 1951. In Dade County appliance sales for the six months were $95.91 per average residential customer.

These sales didn't just happen. They were stimulated by extensive newspaper advertising and sales promotions of FP&L. Merchandising aids from the company have pulled many a dealer out of his sales slump.

Some years ago the company became a target for the electric utility industry because of its drive to promote oil heating of homes. But there was a reason for it. The company says that Florida homes are built for warm weather living, and they don't need elaborate house heating systems. There aren't enough cold days to justify such installations. And for the same reason FP&L's system is not built to supply electricity for house heating. So the company plugged oil heating to lower the severe peak during a few cold days of the year.

However, with more air conditioning going into homes as well as commercial establishments, the load peaks and valleys have been smoothed considerably. With more of this type of load and the state becoming a mecca for summer vacationists, FP&L looks forward to a pleasing load curve.

Business Increased in 1951 . . . Here is how the company's business in 1951 was up over 1950. Sales were up 20% to 1,665 million kwhr. Residential use was up 11% to 2,445 kwhr. Commercial use was up 15% to 12,962 kwhr. Revenues were up 19% to $54,804,263. Net income was up 5% to $6,706,731. Earnings per common share went from $2.43 to $2.50. And dividends were boosted from $1.25 to $1.40 a share.

Florida is not just a land of sunshine, oranges, and tourists although some 5 million visitors do pour some $880 million a year into the state's economy. Recently much of the emphasis has been put on promoting the state as the ideal spot for summer vacations. FP&L has taken the leadership in promoting "extend your visit" and "come to stay." Thousands of "Yankee Brow Moppers," a good natured reminder, printed on paper toweling, that Florida summers are milder than in many places farther north, have been sent all over the country. Florida considers anyone living in any of the other 47 states to be a yankee.

Agriculture and Industry Booming . . . Industrially and agriculturally the state is growing. Agriculture is a $600-million business, including a $230-million citrus and a $141-million vegetable crop. The frozen citrus concentrate industry is still expanding. Beef cattle raising is up 64% in the past ten years, and with many western cattle raisers coming to Florida the prediction is for bigger things ahead. Pulp and paper plants are valued at $200 million, and $100 million more is now going into new plants.

As for Miami it is fast becoming the hub of an international market for trade and travel, especially to the West Indies and South America. Plans are now progressing for a $100-million Inter-American Cultural and Trade Center at Miami which will rival any other in splendor.

These are some of the things which FP&L says justify its faith in the future

CUTLER PLANT is typical of the outdoor construction being utilized by the company in its postwar expansion. In keeping with the coastal setting, smokestacks simulate lighthouses

and its spending of $332 million on system expansion.

This sparking of Florida's economic growth has been aided by the leadership of the company and its president, McGregor Smith. This is so well recognized in the state that when the Florida Industrial Development Council was formed, the governor appointed Smith as its chairman.

FP&L says its policy is "Help ourselves by helping Florida grow." And with this theme the company has put its resources to work to bring new industries to Florida. Recently the company sent thousands of copies of a 215-page guide to investment opportunities in Florida to financiers throughout the nation. In addition the company places before the visiting tourist and businessman the opportunities for development of the state's natural resources and widening of product markets. The results have been gratifying.

This "Boost Florida" policy has paid off in public approval. Last year 22 cities granted 30-year franchises. But such welcome support did not spring up over night. The company has had some rough times.

When Smith left the presidency of Louisiana Power & Light Co in 1939 to head FP&L, the utility industry was a favorite target of the politicians. He immediately adopted a straight-forward manner in "placing the cards on the table" and talking good business to municipal officials. When the politicians would start to lambaste the utilities, he would jump into the fight and slug it out, using the truth, the facts, and good, sound reasoning. This won him the respect of everyone and paved the way for the company to take leadership.

One way the company has been showing this leadership is in the fight against the expansion of the federal power program. As Smith says, "Our government officials must be given to understand that America does not want socialized power, socialized medicine, or socialized anything else."

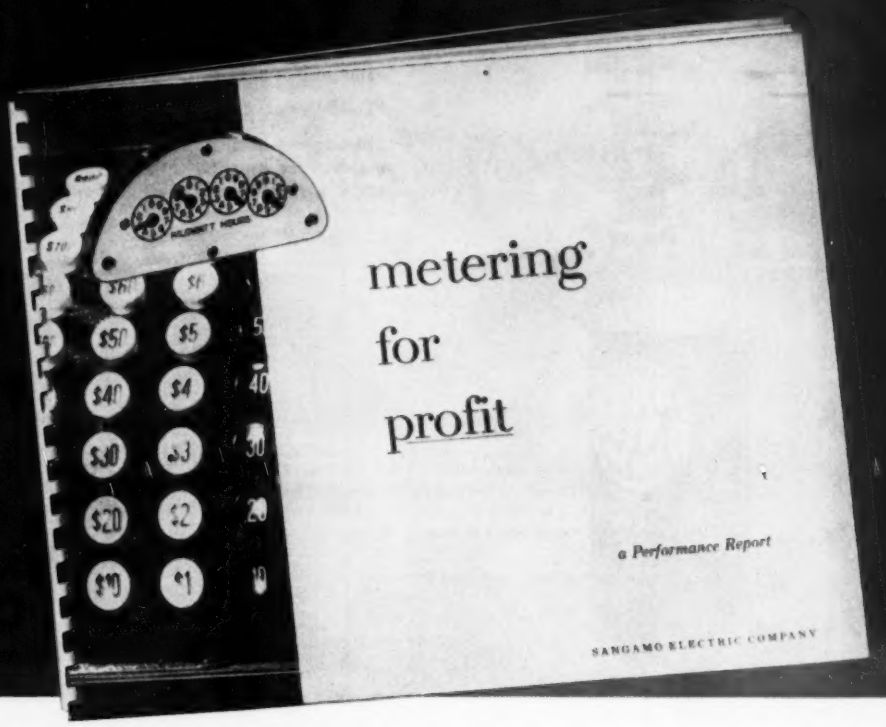
Stockholders Get Attention . . . As an investor-owned company, FP&L depends a lot on the support of its stockholders. So the company believes in keeping them informed, in making them feel that they are a part of the FP&L family. Messages on the utility industry along with up-to-date reports of the company are sent regularly to the 28,000 common stockholders—14,800 men, 11,800 women, and 1,400 institutions and businesses.

The company has organized a "Sunshine Service Club" for its stockholders with a "clubhouse" in every city it has an office. It encourages the owners to make use of their own facilities.

Today the company looks confidently to the future. It will have plenty of capacity to serve the growing Florida it envisions. And judging by the way in which it has raised money in the past, it does not anticipate any difficulty in getting the additional sums needed to make its expansion plans of today the reality of tomorrow.

YANKEE
BROW MOPPER
ALSO FOR WIPING OFF SMOG
for FOLKS "UP NAWTH" who don't know about FLORIDA'S MILD SUMMERS and "BUDGET" VACATIONS
Check the Facts
SWEPT BY CONSTANT TRADE WINDS...
WATER-COOLED BY OCEAN, GULF AND LAKES...
FLORIDA SUMMERS ARE MILD!
90-0-0-0...
Mop that perspiring brow and come on down! Make it
FLORIDA For YOU in '52
for a "BUDGET" SUMMER VACATION

YANKEE BROW MOPPER is a paper napkin intended for folks "Up Nawth" who don't know about Florida's mild summers and "budget" vacations. Message at right compares Miami's six days a year with temperatures 90 and over with the many such days in other big cities



What would YOU like to know about metering?

Would you like to know what makes OUTDOOR METERING possible?

Sangamo J Meters are fully and precisely compensated for all temperature extremes . . . They are designed to maintain the proper physical relationships of all parts under all conditions of temperature and vibration . . . They are constructed of corrosion-resistant materials and are furnished with specially heat-treated glass covers.

Would you like to know how HIGH BILL COMPLAINTS can be reduced?

Damping magnets control the speed of the meter. Accuracy depends on the permanence of their strength. Millions of J Meters equipped with Alnico magnets have been in operation for years without a report of a single one of them speeding up in service due to loss of damping strength.

Would you like to know what QUALITY CONTROL means to you?

Sangamo's statistical quality control insures accurate and uniform performance. Control techniques —like examining production samples . . . testing those samples . . . and checking critical dimensions assure uniform accuracy. Service records from the field are also studied and evaluated—you can read the full story in "Metering for Profit."

Would you like to know why meters can operate for years with SUSTAINED ACCURACY?

Sustained high accuracy is no accident. Liberally designed potential and current elements combine to insure accurate registration from the lightest loads to loads well over four times the nominal current rating. Other important electrical and mechanical features embody the desired characteristics in all Sangamo J Meters.

Meters are important to everybody in the Electric Utility Industry—not only because they are the operating components through which every cent of revenue is measured—but, because modern meters can help the industry obtain the maximum benefits in "Metering for Profit."

Would you like to know how modern meters can promote good public relations?

Would you like to know how accurate meters facilitate fair pricing? How dependable meters can reduce operating costs? And, how well-designed meters save operating and maintenance expense for your company?

If you are interested in the answers to these, and many other questions, get your copy of "Metering for Profit." It's yours for the asking.

SANGAMO ELECTRIC COMPANY, Springfield, Illinois

Please send my free copy of "Metering for Profit"

Your Name _____

Title _____

Company _____

City and Zone _____ **State** _____

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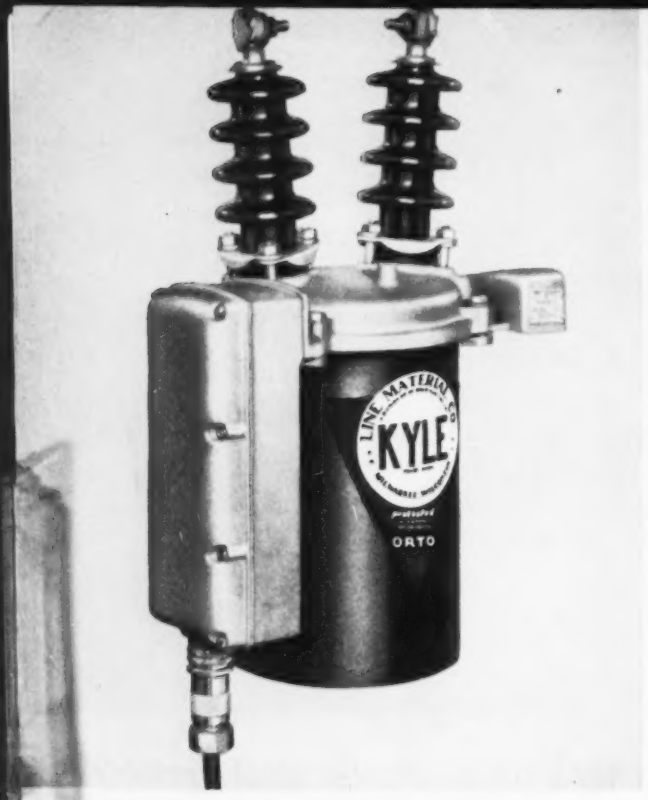
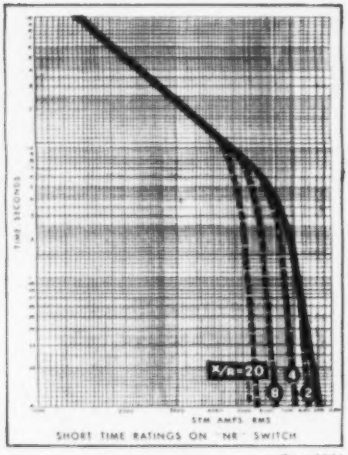


L-M's Kyle Type "NR" remote control oil switch—the same switch used in L-M's switched capacitor racks.

"Field-Designed"—with the features users asked for.

200-amperes nominal load rating at 14.4 kv, 150 amperes for capacitor switching. 9000 amperes RMS asymmetrical momentary current rating.



Data 235A

L-M Announces New Remote Control Oil Switch for Capacitor Switching

Here is L-M's new motor-operated 200-ampere remote control oil switch. It is specially designed for low-cost capacitor switching up to 3500 kvar 3-phase, but is equally suitable for street lighting, flood and airport lighting, protective lighting, sectionalizing, and other remote control switching applications. Ratings meet users' needs and requirements for capacitor switching and many other applications.

The contact structure is so designed that heavy currents increase contact pressure and give the switch high momentary and short-time current ratings. Spring-loaded contacts give very fast "make" and "break"—which eliminates restrikes and minimizes contact erosion when closing in on large capacitor banks.

The switch can be bolted directly to the pole, or crossarm with a thru-bolt or crossarm-mounted with a clamp-around hanger. Clips also available for mounting on substation steel structure.

Control motor requires less than one ampere at 120 volts, which permits the lightest wiring, simpler control circuit, and gives longer life for limit switches and relays.

Get Full Information

Ask the L-M Field Engineer for details on this new Type NR Switch—or write Line Material Co., Milwaukee 1, Wis. (a McGraw Electric Company Division).

Type "NR" Switch Ratings

SINGLE PHASE

VOLTAGE

Nominal	RMS 14.4 kv
Maximum design	RMS 15.0 kv
60 cycle, one minute withstand, dry	RMS 35.0 kv
60 cycle, ten-second withstand, wet	RMS 30.0 kv
1½ x 40 Ms impulse withstand, crest, BIL	95.0 kv

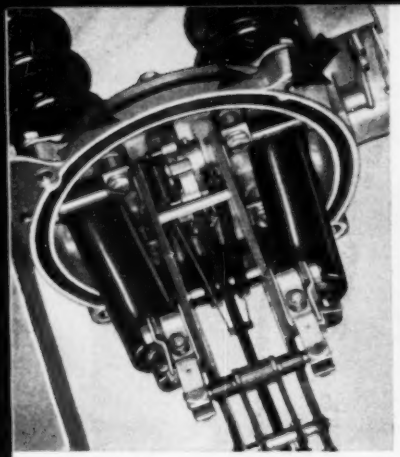
CURRENT

Thermal	200 amperes
Capacitor switching, nominal	150 amperes
Inductive load switching,	
75 to 100% PF	200 amperes
50 to 75% PF	100 amperes
Less than 50% PF	50 amperes
Momentary, RMS Asymmetrical	9000 amperes
Short-time, RMS Symmetrical	
10 seconds	1400 amperes
1 second	4500 amperes

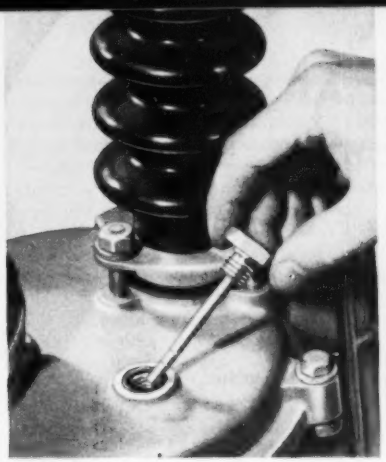
For larger ratings at shorter time intervals see curve, Data 235-A above.

CONTROL

Motor-operated actuator requires less than one ampere at 120 volts. Permits simplest control circuit and gives long life of limit switches and control relays.

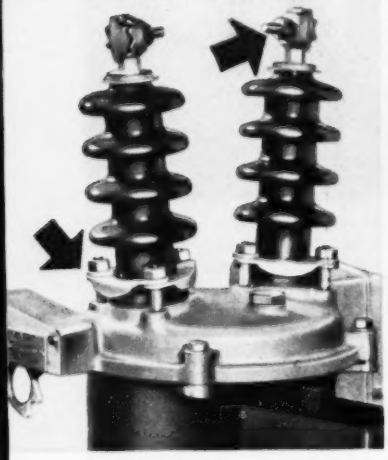


Head may be rotated and set at desired position. Lips in the groove on the underside of head hold the gasket so that it doesn't fall out when the cover is lifted.

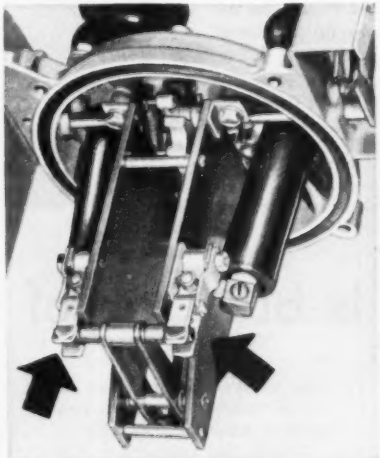


Oil dip stick on the head for checking the oil level. The tank holds 1½ gallons of oil. The inner mechanism is insulated from the tank by the oil and by a tank liner.

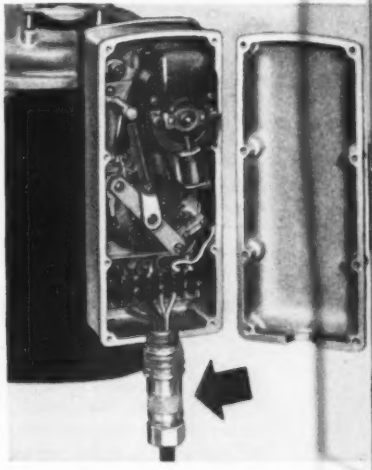
Heavy bracket for direct mounting to pole or crossarm with or without a hanger. Heavy tank, with inserted concave bottom, so that only the rim takes abrasion.



The bushings are the clamp-on type which make replacement easy. Bushings are oil-filled for lowest radio noise level. Plated Universal terminals for aluminum or copper conductor, No. 8 to 2/0.



Contacts arranged so heavy currents increase contact pressure, giving high momentary and short time current ratings. Spring-loaded contacts give quick make and break to prevent restrikes and minimize erosion.



Motor-operated actuator requires less than one ampere at 120 volts, permitting lighter wiring and simplest control circuit, and assuring long life for limit switches and relays. Weatherproof plug-in connection at bottom of box and weatherproof plug available.

CAPACITOR SWITCHING RATING

Voltage	Based on 25 KVAR Units				Based on 15 KVAR Units			
	Three-Phase		Single-Phase		Three-Phase		Single-Phase	
	Bank Size KVAR	No. of Units	Bank Size KVAR	No. of Units	Bank Size KVAR	No. of Units	Bank Size KVAR	No. of Units
2400	600	24	350	14	585	39	360	24
4160	1050	42	625	25	1080	72	615	41
4800	1200	48	725	29	1215	81	720	48
7200	1800	72	1075	43	1845	123	1080	72
12470	3225	129	1850	74	3240	216	1860	124
13200	3375	135	1975	79	3420	228	1980	132
13800	3525	141	2050	82	3555	237	2070	138

LINE MATERIAL
Kyle® Oil Switches

Like all Kyle reclosers, the Type NR switch is filled with ORTO®, L-M's oxidation-resistant transformer oil, inhibited for longer life.

Chester F. Ogden

Manager of Purchases, Detroit Edison Co, has these duties and responsibilities:

- **Purchasing of materials and supplies.**
- **The purchase or lease of real estate.**
- **The custody and management of non-utility property.**
- **The purchase and sale of patents.**
- **Traffic matters.**
- **The Standards Catalog and Standard Material Specifications.**
- **The operation of office and service buildings.**
- **The operation of restaurant service.**
- **The inspection and maintenance of all elevators and cranes (except those of the Production Department) and their maintenance for the Central Heating Department.**
- **The general supervision of fire protection methods and equipment except for the Production Department.**
- **Salvage sales.**

Purchasing Is but One of His Jobs

Chester F. Ogden is manager of purchases for the Detroit Edison Co. But the title is a misnomer. His duties (See table) are so varied that he could easily use another half dozen titles. The variety in his work is due to the fact that he operates in what the company thinks of as a service area.

Ogden isn't at all unhappy. He believes in service. He also feels that the more broadly he can function in a helpful capacity both inside and outside the company, the better he is doing his job.

Primarily he is in charge of the Purchasing Department—a policy-making as well as operating executive. So about a third of his working hours go into the purchasing job itself. Perhaps 20% is devoted to the building operation, 10% to the restaurants. The remainder is spread over the entire range of job specifications. Incidentally include in his duties that monthly trip to Washington on defense electric power matters which affect procurement of materials.

Actually the operation of Ogden's widely diversified areas is handled by departmental specialists. Where Ogden puts in his time is in seeing to it that their work is done in line with policy. This means that it is done for the best interests of Edison's employees (meaning their material comfort), of its stockholders (meaning economical as possible), and of the public (meaning service that wins friends).

Working at policy level the manager of purchases sits on the operating council of the company. This group of major officials meets every Friday morning to discuss current matters, keep each other posted on new specifics, and sometimes to make recommendations to more formal administrative channels.

He also belongs to five staff committees. These function in a staff capacity and have no direct executive authority. These committees are labor policy, patent, salary, safety, and standards. Most of these meet about once a month.

Purchasing Is Simple at Edison . . . Purchasing procedures are simple and logical at Edison. Buying upwards of $100 million a year, the various buyers can place orders routinely for anything up to $1,000. Above that a quotation summary sheet is required. It describes the product, its use, how long a proposed buy will last; gives an analysis of the various bids entered; and makes a recommendation. Ogden normally approves them (20 or so a day pass over his desk) and returns them to the buyers. When something out of the ordinary appears, he makes it a policy to inquire about it at once.

Like most executives Ogden is not

bound by an eight-hour day or five-day week. Though official hours are 8 to 5, he usually sticks around until 6. Work that requires more concentration or uninterrupted time than he can get at the office goes home with him. He usually spends three to four hours in the office on Saturday when it is "closed." And occasionally he will be down on Sunday.

Part of his home work is reading to keep up with the times. He reads thoroughly the "McGill Commodity Report," the "Kiplinger" and "Whaley-Eaton" letters, "Business Week," the "National City Bank Monthly Business Letter," and various company reports. Somewhat less thoroughly he reads "Purchasing," "Electrical World," "Fortune," and "Life."

A Day in the Life of Chet Ogden . . . Here's a typical day with Ogden. He started it by looking over the agenda prepared on the previous day. Then his secretary brought in the mail and waited for instructions. Some of the mail was put aside for handling later. Some he passed back to the secretary with instructions to send it elsewhere —occasionally with a note attached. And for some he dictated replies. This took about a half hour only because the secretary had pulled out some of the mail that she could handle herself.

The first conference of the day came at 9:23 when Vincent A. Stace, his assistant, and Kenneth Thornton of the Purchasing Department came in with a study of forward fuel oil requirements. Edison is opening a large power plant next year. It will require a large stock of oil in case of a coal shortage or other emergency. The question was whether to buy some available distress oil at once and tie up a lot of money (about $300,000) or wait until later. The men studied the requirements tables, talked about supply sources, hypothesized on forward price movements, and decided to wait a while. Said Ogden:

"Let's keep careful track of this. If the price goes down, we are ahead. If it goes up a little, we're still better off for not having tied up the money. If it goes up a lot, well, we'll be proved wrong."

Conference followed conference (usually with only a man or two at a time). Subjects involved included: Edison Electric Institute activity involving standards procedure and policy, employee use of company autos, the advisability of leasing space for certain departments, the disposal of flyash, a contract with a contractor for leveling some land, and the sale of copper scrap. He was out of the office only 20 minutes during the morning for a discussion with Fred A. Compton, company vice president of sales.

Luncheon was in the main building cafeteria whose operations fall in his area and where he lunches at least once a week. Two or three times a year he lunches in each of the six outlying cafeterias the company maintains in its power stations.

Luncheon usually gives Ogden an opportunity to keep in touch with both company and civic affairs. Three or four days a week he eats with a company, civic, or business group.

Active in Civic Affairs . . . He is active in civic affairs—an activity which the company encourages in all its executives. One of his favorites is the Goodwill Industries whose aim is the rehabilitation and employment of physically handicapped people (EW, March 5, 1951, p 16). Another favorite of Ogden is the Boy Scouts, and he is a member of the Detroit area executive council.

At 3 pm the first formal conference occurred—something exceptional, usually he attends two or three a day. This one included the senior buyers and inspection chiefs. The topic: New procedures and routines covering inspections and standards. Discussion went around the table, seeking answers to such questions as these:

What should be inspected on new installations, everything? If not everything, how much? Who should be in charge? How can liaison be best maintained between inspection, the buyers, construction, production, engineering?

At the regular weekly meetings of all buyers they talk, among other things, about price levels as indicated on a market sheet covering key commodities. The discussions obviously will often branch out into the likely moves ahead, but Edison does not attempt to anticipate price movements formally.

The meeting broke up about 5 pm leaving Ogden nothing to do but clean up the mess of material piled on his desk and plan for the following day.

STANDARDS get a going-over by Chet Ogden and Leon J. Jacobi, whose title is supervising engineer for inspection and standards

The Phone Keeps Jangling . . . But Ogden's day was more complicated and involved than we have indicated. Throughout the day men came to him to get answers to questions. Often they were gone again in 30 seconds, but they did interrupt what Chet was doing. And then there was the telephone. Its jangling interrupted even during the conferences. And to complete the day there was the mail. After his early morning session with his secretary on the first batch of letters, there were two other mail deliveries. These he handled whenever he could find time.

Ogden's qualifications for his job are due partly to the depression. He was studying engineering at the University of Michigan when the depression struck. As industry jobs were getting scarce, he decided to switch to the Business School and get a master's degree. This engineering-business training has been a blessing. He has no trouble in following the engineers when discussing with them proposed purchases. His engineering training is also valuable to him in supervising the operation of buildings and their facilities.

18 Years with the Company . . . He joined Detroit Edison in 1934 in the Purchasing Department. In 1942 he was made assistant purchasing agent and in November 1946 purchasing agent. Since then the title was changed to manager of purchases. He has been active in the affairs of the National Association of Purchasing Agents and served as its president in the year ended last June. While holding office he travelled 50,000 miles to various meetings and conventions in addition to his regular work at Detroit Edison.

MEETING REPORT

Designers' Role in Safety . . .

. . . is discussed at EEI committee meeting. Fancher says engineers can help reduce accidents among operating personnel

Design for safety should be a primary objective for power system engineers, said E. E. Fancher, Niagara Mohawk Power Corp. Reviewing accident statistics at the New York meeting of the Edison Electric Institute Electric Equipment Committee, Oct. 14, he noted that station accidents have not decreased the past ten years.

Of the 241 fatalities, he pointed out, 101 happened where men depended upon their own alertness and balance for safety near energized equipment. An additional 60 happened when workmen failed to heed limits of safe working area.

Designers' Contribution . . . Designers can contribute to reducing accidents of these types, Fancher said, by providing (1) adequate points for portable grounding, (2) better working space for large men around energized equipment, (3) indicating devices to show when equipment is energized. Working practices should include adequate marking of working area and barriers around energized equipment. There is room for improvement also, he observed, in the methods and nomenclature used in arranging outages.

Specific measures recommended by R. M. Pennypacker, Philadelphia Electric Co were (1) elimination of disconnects within reach of ground, (2) isolation or screening of switchgear for working space, (3) provision of permanent access ladders and good grounding for outdoor switch structures and (4) adequate identification of equipment.

Astoria Station . . . Proximity of the best available site to the flight pattern of LaGuardia Airport posed unusual problems in the design of Astoria Generating Station according to J. G. Noest and H. Knecht, Consolidated Edison Co. Because of Civil Aeronautics Authority and New York City restrictions, stack height was limited to 300 ft.

Control of stack emission with short stacks in a densely populated area, Noest continued, has been accomplished by terminating the stacks in a Venturi nozzle to project any emission high above surrounding buildings. Remote TV monitoring of the stacks is placed in the central control room of the plant.

Scheduled for early 1953 operation, the present project provides two 160 Mw 3,600 rpm cross-compound double-shaft turbogenerator units. Each unit will have one 1,800 psi 1000/1000 F steam generator with unit design throughout. The ultimate capacity, said Noest, will be 1,000 Mw, which will feed into the existing 138-kv cable system at North Queens substation 2,500 ft distant.

Pool Results . . . The Southwest Power Pool has reduced reserve requirements, improved service reliability, and taken advantage of load diversity in six-state area to gain useful system capacity, said C. M. Custer, executive director of the pool. Its original objective was to pool available generation in ten systems for aluminum production in 1941.

The pool now serves 20 to 22 systems and provides power interchange to utilize most economical generation. Because the combined capacity of over 90 generating plants exceeds 3,700 Mw, he continued, it is possible to absorb new generating units as large as 125 Mw.

Manufacturers have proposed the use of aluminum for buses in enclosed switchgear, said J. S. Brown, Duquesne Light Co. He urged careful review by engineering committees to determine proper methods for satisfactory application.

Plant Visit . . . Consolidated Edison was host to the committee on an inspection trip to the utility's East River Generating Station and West 19th St Substation. A. M. deBellis, chairman of the committee, is inside plant engineer of the utility.

Changes in Capacity Reported to FPC

PLANT ADDITIONS DURING AUGUST

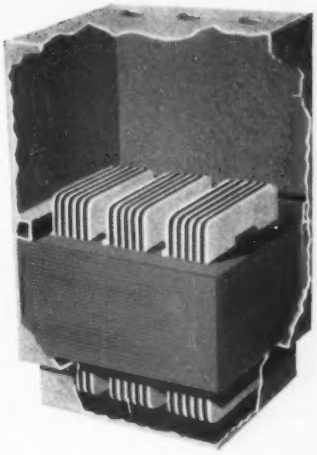
State	Utility	Plant	Fuel	Capacity (Kw)
Maine	Public Service Co of New Hampshire	Swans Falls	IC	1,000
Mass.	Boston Edison Co	Edgar	S	81,250
N. Y.	Rochester Gas & Electric Corp	Rochester 26	H	3,600
Ill.	Central Illinois Electric & Gas Co	Saybrooke	S	30,000
Ill.	Bethany Municipal Light Department	Bethany	IC	446
Neb.	Nebraska City Utilities	Nebraska City	IC	1,500
N. C.	Nantahala Power & Light Co	Cedar Cliff	H	6,275
Ga.	Georgia Power Co	Yates	S	100,000
Fla.	Vero Beach Municipal Power Plant	Vero Beach	IC	3,200
Ky.	Army Corps of Engineers	Wolf Creek	H	45,000
Ky.	Army Corps of Engineers	Wolf Creek	H	45,000
Tenn.	Tennessee Valley Authority	Hales Bar	H	24,300
Tex.	Texas Power & Light Co	Gaines Dixon	IC	3,500
Tex.	Teague Light & Power Department	Teague	IC	675
Wyo.	Bureau of Reclamation	Boysen	H	7,500
Colo.	Lamar Electric Department	Lamar	S	5,000
Ore.	Mountain States Power Co	Mill City	H	120

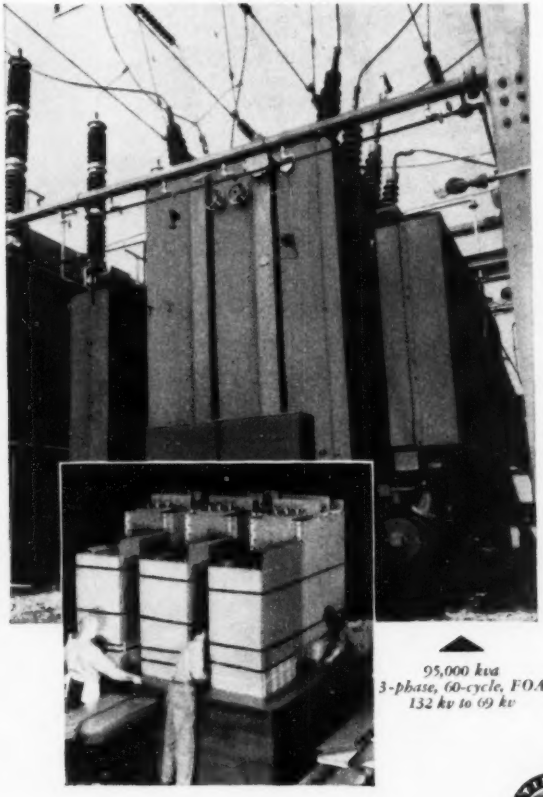
PLANT RETIREMENTS DURING AUGUST

Vt.	Central Vermont Public Service Corp	Mendon	H	1,600
Ill.	Bethany Municipal Light Department	Bethany	IC	100
Mich.	Consumers Power Co	White Cloud	IC	576
Mich.	Traverse City Light & Power Department	Water Works	S	750
Neb.	Panhandle Rural Electric Membership Association	Hyannis	IC	252
Neb.	Wayne Water & Light Department	Wayne	IC	400
Tenn.	Townsend Light & Mill Co	Townsend	H	100
Tex.	Gulf States Utilities Co	Calvert	IC	1,000
Tex.	Gulf States Utilities Co	Huntsville	IC	2,000
Tex.	Gulf States Utilities Co	Navasota	IC	2,000
Utah	Nephi Electric Light Plant	Nephi	H	300

H—Hydro, IC—Internal Combustion, S—Steam
United States Capacity as of Sept. 1—Hydro, 19,371,353 kw; Internal Combustion, 2,020,097 kw; Steam, 56,566,374 kw; Total, 77,957,824 kw.

This design assures efficient cooling





95,000 kva
3-phase, 60-cycle, FOA
132 kv to 69 kv

The Form-Fit design of Westinghouse Power Transformers directs cooling oil to assure efficient heat transfer . . . efficiency that contributes directly to the superior operating characteristics of these transformers.

The reasons for this efficiency are based on simple fundamentals of transformer operation. Heat generated in any transformer comes from two sources: the windings and the core. The snug-fitting tank on a Form-Fit transformer directs the cooling oil to the heat-dissipating surfaces in the quantities required. This assures maximum use of the cooling oil. The pancake-type coils, standing in a vertical plane, form natural flues for rapid circulation—on *both sides* of each coil—resulting in low temperature gradients. This provides a greater cooling margin for overloads.

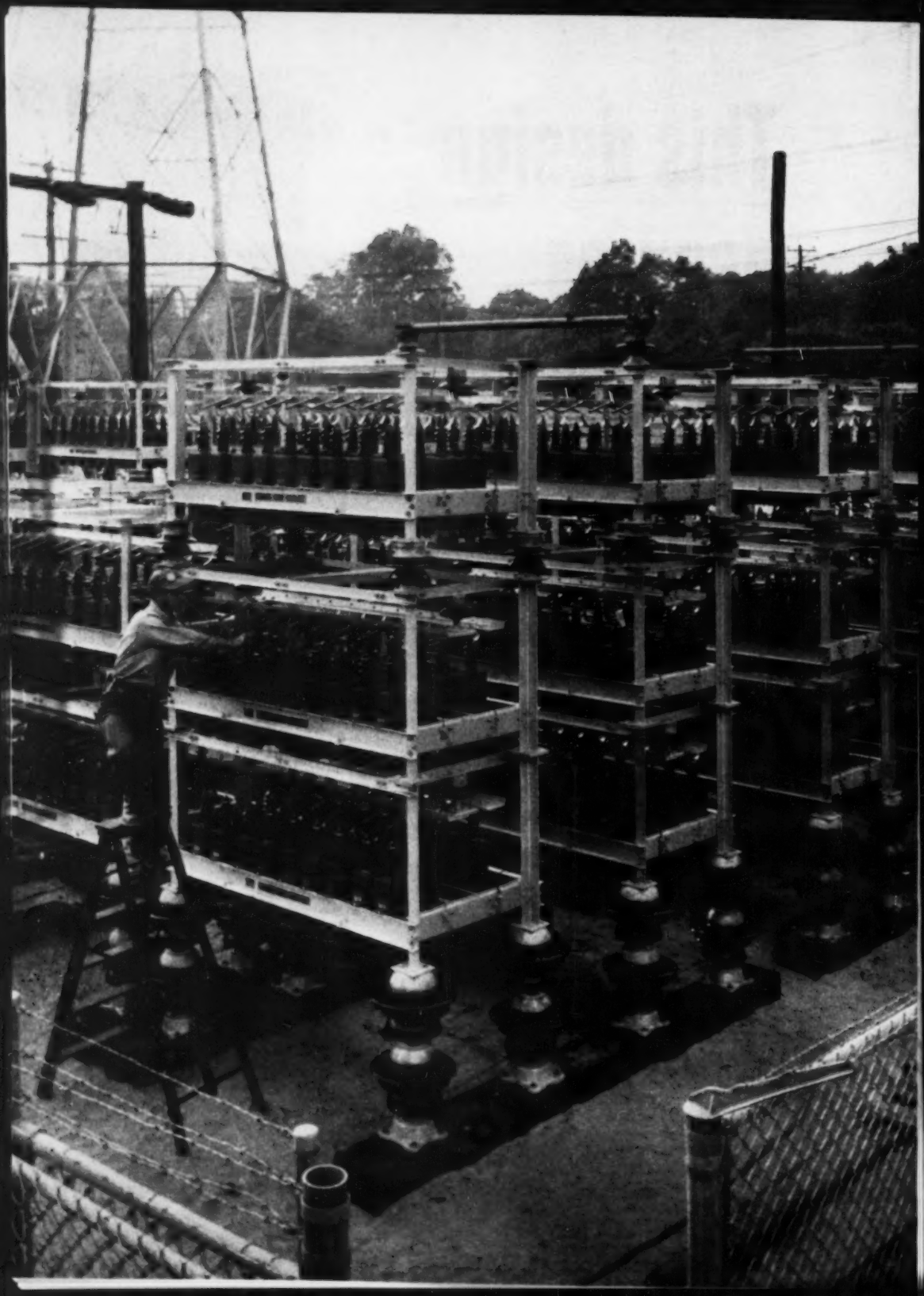
Form-Fit construction is ideal, too, for forced oil cooling. Since directed oil flow is inherent in the design, no baffles or other artificial devices need be introduced.

This compact, efficient design, with the added savings in size and weight affected by Hipersil® Cores, makes Westinghouse Form-Fit Power Transformers smaller and lighter per kva than any other design. The result is far more economical installation, as well as reduced maintenance expense. Your Westinghouse representative will be glad to discuss the savings possible on your system, or write for Booklet B-4142A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70639A

YOU CAN BE SURE...IF IT'S Westinghouse

POWER TRANSFORMERS



Meeting the Nation's Growing Power Load

Releasing Kilovars for More Active Duty

Today, utility engineers are asking "At what point . . . do you do what . . . to get more kilovars?" Concern about the method of controlling the flow of kilovars to industrial and residential load is the natural result of generating and transforming increases all along the line.

The ability of capacitors to provide solutions to many kilovar load problems is only now becoming generally recognized. Aside from the positive advantages of improved voltage regulation, reduced I^2R losses and reduced operating costs, is the over-all fact that lines and equipment ahead of the capacitors are released for more load. Eliminating reactive amperes also means more efficient power station performance.

Making capacitor applications more practical and attractive are recent developments that have lowered relative costs. Indeed, the cost for all other means of supplying kilovars has increased far more than the cost of capacitors during the last four years.

The capacitor is not a spectacular or complicated piece of equipment as electrical equipment goes, but through the years Westinghouse has made steady improvement through constant research, development and experience. We could point to many development firsts for the capacitor. In this case, we believe that our greatest contribution has been the introduction of new methods of mounting and applying capacitors, which has made their application more convenient, economical and practical in obtaining over-all efficient system performance. This vast Westinghouse utility experience is being constantly applied to the solution of many other important utility problems. J-97170

YOU CAN BE SURE...IF IT'S

Westinghouse

Series capacitors quadrupled in size

About two years ago, the road block that had long stymied the use of series capacitors on high-voltage lines was removed. This was the development of a means for shunting excess current, during a short circuit, around the capacitors without removing them from the circuit, and thus losing their value during the critical transient period. This switching arrangement was applied to a 15,000-kva bank of series capacitors at Chehalis, Washington, substation on the 230-kva system of the Bonneville Power Administration.

With the way thus cleared, bigger —much bigger—series capacitors came into view. Early in 1952, an installation more than twice as big—for 46,000 kva—was made, also on the Bonneville system. By the year's end, another one, again almost double in size—85,000 kva—will be placed in service on the Bonneville Power Administration system.

Switching high-voltage shunt capacitor banks

The Indianapolis Power & Light Company recently installed on its system one of the first 34.5-kv capacitor banks in this country.

This capacitor bank, totaling 7290 kva, was part of a program of locating var generation close to var load in the most economical and practical manner. This installation demonstrated that high-voltage, shunt capacitor banks can be switched without exceeding 2.4 times normal phase-to-ground voltage on the bus, a value in the range produced by interruption of short circuit currents.

Capacitor switching phenomena

The toughest job you can put on a breaker is the switching of capacitors. For some time, Dr. Roswell C. Van Sickle has been conducting extensive tests in the Westinghouse High Power Laboratory to determine the phenomena of capacitor switching, the performance of "De-ion®" grid oil circuit breakers, plain-break oil circuit breakers, magnetic blast air circuit breakers, and compressed air circuit breakers. For the complete description of Capacitor Switching Phenomena, write for the AIEE Technical Paper on this subject prepared by Dr. R. C. Van Sickle and John Zaborszky . . . Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Illustration on opposite page

Pictured here is the largest unit in this country of the 69,000-volt rack class. This Westinghouse capacitor application for the Long Island Lighting Company comprises 1005 units for a total of 25,125 kvar.

INSTALL G & W OIL SWITCHES *Overhead* FOR FULL LOAD BREAK SECTIONALIZING

SWITCHING CONTACTS IN OIL FOR PROTECTION AGAINST CORROSION

"ORA" Single Throw

"ORAD" Double Throw

"ORA" OIL SWITCHES

Recommended for full load-break sectionalizing of overhead circuits where protection against atmospheric corrosion and bad weather conditions is important. Switch links and floating contacts (standard Type "RA") oil-immersed mean permanent trouble-free operation.

The angle location of porcelain outlet bushings facilitates making the line connections from above or below. Solderless clamp lugs are included. The steel tanks are usually arranged for hanging from double cross arms, with the operating lever on the side next to the pole. Operation from ground level adds to the convenience.

Write us or ask your local representative for Bulletin DB51, which gives complete data on the "RA" line of oil switches.

G & W ELECTRIC SPECIALTY CO.

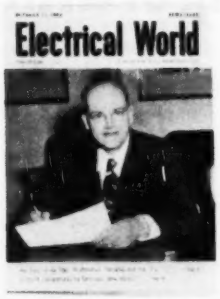
7780 DANTE AVE., CHICAGO 19, ILL., U.S.A.

Cable terminating, connecting and sectionalizing devices

Representatives in principal cities of U. S. A. In Canada — Powerlite Devices Ltd. Toronto and Montreal

Hubbard Elected Head of IAEL

Group's top executive, on leave from PS of Colorado, is secretary-manager of Rocky Mountain Electrical League



(Cover Story)

Ralph B. Hubbard, secretary-manager of the Rocky Mountain Electrical League, has been elected president of the International Association of Electrical Leagues. Last year he was vice president of IAEL's board of governors and before that treasurer.

Entered Field in 1913 . . . Hubbard, on leave from the Public Service Co of Colorado, started in 1913 as a junior engineer with Denver Gas & Electric Light Co, a predecessor company of Public Service. After two years with Denver G&E, he went to H. L. Doherty & Co, New York, remaining until 1917. Later he became superintendent at Boulder, Colo., for Western Light & Power Co.

From 1930 to 1933 Hubbard served as staff engineer for Public Service at Denver. Then he went on to become director of PS's industrial development department. In 1945 he was granted a leave of absence from PS to assume the RMEL duties.

Covers Largest Area . . . RMEL has the largest geographic area of any electrical league in the United States. The league draws its membership from Colorado, Wyoming, New Mexico, and the Black Hills area (southwest corner) of South Dakota. This area covers 340,000 sq miles or approximately 11.25% of the total area of the country. It is also believed that RMEL has the largest number of utility companies as members—24.

The newly elected president is also chairman of the Denver section of the American Institute of Electrical Engineers. He is a past president of the Colorado Society of Engineers.

Carter B. Withers, superintendent at the Willow Island station of Monongahela Power Co since 1949, has been made manager at the utility's Albright station. **Howard E. Holtzworth,** assistant superintendent at Willow Island, succeeds Withers. **Robert T. Payne** moves up from acting superintendent to manager at Monongahela Power's Rivesville Station.

Paul S. Colby, formerly with Ebasco Services, Inc, has joined Carolina Power & Light Co as an engineering consultant. Colby, who will make his headquarters in the utility's general office at Raleigh, came to Ebasco in 1942. Prior to this he was associated with the Central Illinois Public Service Co and Kansas Gas & Electric Co.

Dr Robert E. Samuelson has been appointed chief engineer for Motorola, Inc's research laboratory at Phoenix, Ariz. Dr Samuelson formerly was head of communications research for Motorola at Phoenix.

Henry A. Carlberg has been appointed manager of plant engineering, part of General Electric Co's manufacturing department at Hanford Works, Richland, Wash. Carlberg came to Hanford in 1943 when the Army Corps of Engineers was starting to build the atomic energy plant. A year later he transferred to the prime contractor, E. I. du Pont de Nemours & Co. In 1946 when the AEC took over the plant, Carlberg moved to GE, the new prime contractor.

Ray H. Timmons, manufacturing manager for Westinghouse Electric Corp's Industrial Product Divisions at Pittsburgh since 1949, has been appointed manager of the firm's Steam Division at Philadelphia. With the company since 1928, Timmons will report to D. W. R. Morgan, vice president in charge of Westinghouse's South Philadelphia steam operations.

D. J. Jones has been named general sales manager of Honan-Crane Corp, Lebanon, Ind. Formerly district manager for Honan-Crane's entire eastern sales territory, Jones has been associated with the firm since 1948.

J. D. GREENSWARD

Greensward Is Elected a VP by Allis-Chalmers

J. D. Greensward has been named vice president, director of manufacturing, of the General Machinery Division of Allis-Chalmers Manufacturing Co. Greensward recently was appointed director of manufacturing for the division at which time he succeeded Fred Mackey, who resigned as vice president in charge of manufacturing.

The company also named P. F. Bauer as general manager of the Norwood Works and manager of its apparatus department succeeding Greensward.

Greensward, who started with Allis-Chalmers in 1922, was put in charge of the firm's switchgear sales in 1936 and was made assistant manager of the central station and marine department in 1942.

During World War II Greensward was an assistant to the treasurer in charge of contract termination and in 1946 was named assistant to the vice president in charge of the General Machinery Division. He was ap-

NOW... G-E Super Coronol* rated at 85 C copper temperature

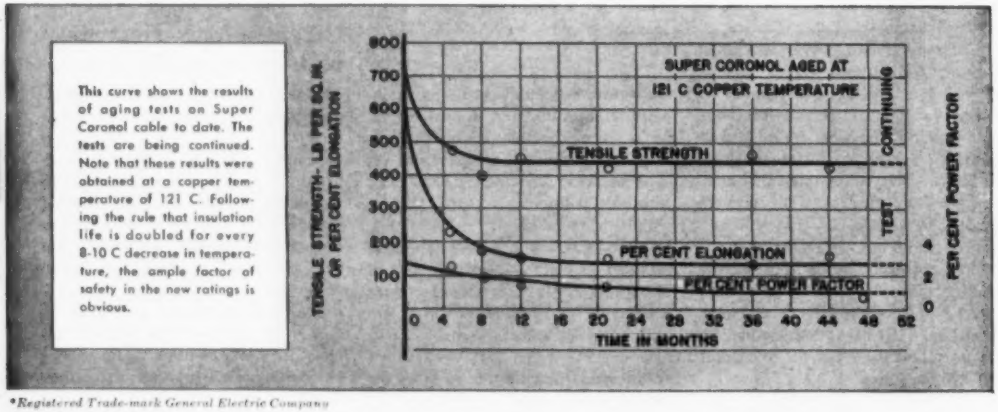
NEW HIGHER RATING APPLIES TO ALL SIZES FOR 0- TO 8000-VOLT SERVICE

General Electric announces that effective immediately it is basing the ratings of all Super Coronol power cables for service up to and including 8000 volts on a permissible maximum copper temperature of 85 C. To our knowledge this is the highest rating ever announced for a solid dielectric power cable in this voltage range. For voltages above 8000, ratings continue to be based on 80 C.

The new temperature ratings mean that Super Coronol cables are now capable of carrying up to 12 per cent more power, continuously, than old-style ozone-resisting rubber-type compounds rated 75 C maximum.

This higher rating is a conservative increase, based on life tests of many cables taken from regular production. Most severe, and at the same time, most impressive of these tests involves cable held continuously under load at a copper temperature of 121 C. This test is now nearing the end of its 5th year. Both physical and electrical properties have been stable since the 20th month. In view of such results, the new rating is still extremely conservative—*and can safely be applied to all Super Coronol cable now in service at potentials up to 8000 volts.*

G-E cable specialists in your area will be glad to help you calculate just what this new rating means in current-carrying capacity in any specific installation—both for continuous loading and for emergency overloads. Or you may wish to write Section W45-1027, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.


This curve shows the results of aging tests on Super Coronol cable to date. The tests are being continued. Note that these results were obtained at a copper temperature of 121 C. Following the rule that insulation life is doubled for every 8-10 C decrease in temperature, the ample factor of safety in the new ratings is obvious.
TENSILE STRENGTH- LB PER SQ. IN. OR PER CENT ELONGATION
800
700
600
500
400
300
200
100
SUPER CORONOL AGED AT 121 C COPPER TEMPERATURE
TENSILE STRENGTH
PER CENT ELONGATION
PER CENT POWER FACTOR
CONTINUING TEST
4
2
0
PER CENT POWER FACTOR
0 4 8 12 16 20 24 28 32 36 40 44 48 52
TIME IN MONTHS

*Registered Trade-mark General Electric Company

Single conductor-Geoprene jacket | Single conductor shielded Geoprene | Pre-assembled aerial cable | Mine Power Cable | Two-conductor concentric lighting cable

GENERAL ELECTRIC

pointed general manager of the Norwood Works in 1947 and was also manager of the company's apparatus department.

With Allis-Chalmers since 1928, Bauer has served as manager of the General Machinery Division's central sales region with headquarters in Cleveland since 1948. Prior to this he was manager of the industrial sales department with headquarters in Milwaukee and before that he served as a salesman in the Pittsburgh office.

Mackey has been employed by Allis-Chalmers since 1923. He was appointed general works manager of all general machinery plants in 1944 and was named to the post of vice president in 1951.

HARRY M. MILLER

Ohio Utility Promotes Miller to a New Post

Harry M. Miller, who has been serving as vice president of Columbus & Southern Ohio Electric Co since 1951, has been elected to the post of executive vice president of the utility.

A native of Gallia County, Ohio, Miller is a graduate of Ohio Wesleyan University and the Ohio State University, College of Law. He practiced law at Gallipolis, Ohio, for several years, serving as prosecuting attorney of Gallia County from 1929 to 1935.

In 1939 he was named executive secretary to former Gov John W. Bricker, who in 1941 appointed him a member of the Ohio Public Utilities Commission. Miller served as chairman of the commission from 1947 to 1949, and in 1950 was named president of the National Association of Railroad and Utility Commissioners.

HARRISON G. FISH

Fish Is Appointed a VP of Northampton Electric

Harrison G. Fish has been appointed vice president of the Northampton (Mass.) Electric Lighting Co, a New England Electric System subsidiary.

Fish, who has served for the past four years as local manager at Southbridge, Mass., for Worcester County Electric Co, also a NEES subsidiary, started his utility career in 1933 with the New England Gas & Electric Association system.

In 1941 he joined Fall River (Mass.) Electric Light Co and later was transferred to Providence, R. I. Then he became a lighting engineer for the Narragansett Electric Co in 1943. Three years later he was made assistant to the manager of the Uxbridge (Mass.) Division of Worcester Suburban Electric Co.

Winfield H. Bearce has been named director of Central Maine Power Co's distribution department succeeding **John L. Collins,** who has retired. Bearce, who joined the company in 1934, served as a power and distribution engineer before this new appointment. Collins started with Central Maine in 1924.

Glenn Shaw, supervisor of steam production for Dayton Power & Light Co since 1930, has retired. Shaw joined Dayton P&L in 1917.

M. Edwin Wiggins, assistant treasurer of Alabama Power Co, has been elected treasurer to succeed **Chester A. Bingham,** who has resigned from this post after serving for 12 years. Bingham, however, will continue as a vice president. **Robert J. Dendy** was named assistant treasurer in addition to serving as cashier. **Samuel L. Chesnut** was made assistant treasuror as well as continuing as paymaster.

John Roser, assistant to the manager of electric utility sales of General Electric Co since 1944, has retired. Since joining GE in 1911, Roser served as assistant to the manager of transformer sales and as co-ordinator of GE activities in connection with Manhattan Project.

OBITUARY

Edward A. Wakeman

Edward A. Wakeman, 82, retired vice president of Pennsylvania Power & Light Co's Wilkes-Barre Division, died Oct. 10 at Wilkes-Barre.

Wakeman started his utility career in the early 1900's with the Batavia Gas & Electric Co, New York. In 1908 he joined United Gas & Electric Co as general manager and two years later he went to the Wilkes-Barre Co, a predecessor company of Pennsylvania P&L, as general manager.

When the Wilkes-Barre company was merged with Pennsylvania P&L in 1922 Wakeman was named manager of the newly created Wilkes-Barre Division. In 1936 he was promoted to vice president of the division, a post he held until his retirement in 1941.

Fred H. Haggerson, 68, chairman of the board of Union Carbide & Carbon Corp, died at New York Oct. 14. Haggerson, who had been with Union Carbide for over 33 years, had been made vice president in 1938, a director in 1941, and president and a member of the executive committee in 1944. He was appointed board chairman in 1951.

Irwin W. Monarch, 62, formerly district superintendent at Kirksville for Missouri Power & Light Co, died Oct. 9. He had been with the utility for about 40 years.

John A. Schimenz, 68, former assistant treasurer of Sangamo Electric Co, died Oct. 11 at St. Louis, Mo. Schimenz retired several years ago after more than 35 years' affiliation with Sangamo.

Performance Standards Adopted for Connectors

Electrical Service Connector Institute adopts clamping force as prime requisite for good performance

The first performance standards for split bolt and vise type electrical connectors for copper conductors to be offered to the electrical industry were adopted Oct. 1 by the Electrical Service Connector Institute. The action was final approval of the work begun by the Technical Committee of the Institute in December 1949.

Though millions of split bolt and vise type connectors have been manufactured annually, there have been no generally accepted performance stand-

Performance Standard for Split Bolt and Vise Type

1. Scope . . . This specification is intended to provide minimum performance requirements for split bolt and vise type electrical connectors to be used with copper conductors. The specification shall give reasonable assurance to the user that connectors meeting its requirements will perform in a satisfactory manner, provided they are installed correctly and used with proper applications.

The primary requirement for providing a good electrical and mechanical connection in a split bolt or vise type connector is an adequate clamping force exerted by the connector on the conductors. The quality of the electrical connection is also affected by the surface condition of the conductors to be joined and the area of contact. Since a standard surface condition of conductors is difficult to define, and to obtain, minimum values of clamping force have been made a requirement rather than maximum joint resistance.

2. Definition of Performance Characteristics:

a. Clamping Force

The clamping force is the total pressure exerted by the connector on the conductors.

b. Reusability

Connectors are considered reusable if they are not noticeably distorted or damaged in any other way. To be reusable, the nut of a split bolt connector or the bolt of a vise type connector must thread freely to full engagement or to engagement with a single maximum conductor for which the connector is designed.

c. Torque Strength

Torque strength is the maximum tightening torque that may be applied to a connector (in which two maximum conductors have been installed) without stripping the threads or rupturing any component part of the connector.

d. Pull-Out

Pull-out is the tension (tensile pull) necessary to separate two maximum conductors that have been installed in a connector.

e. Relaxation

Relaxation of a connector is the relative loss of clamping force from the original value, taking place immediately after the maximum tightening torque has been applied.

3. Material Requirement . . . Split bolt and vise type electrical connectors shall be made from copper, or an alloy containing at least 85% copper.

4. Performance Requirements:

a. Clamping Force

The connector shall (within its range of reusability) exert the clamping forces shown in Table I.

b. Relaxation

The connector shall maintain at least 90% of the initially obtained clamping force over a period of ten minutes.

c. Torque Strength

The connector shall be able to withstand the tightening torque as indicated in Table II without failure.

d. Pull-Out

A connector shall be able to produce the pull-out values listed in Table III when tightened with the average torque producing the clamping force listed in Table I.

5. Methods of Test:

a. General

In order to assure comparable and reproducable test results, uniform test methods and suitable equipment shall be used in determining conformance of split bolt and vise type electrical connectors with the performance requirements. Tests shall be performed as described:

1. Connectors—Split bolt and vise type electrical connectors shall be tested in the condition in which they are normally supplied by the manufacturer. No cleaning, lubricating, or other preparation shall be performed.

2. Conductors—Conductors required for the torque strength and pull-out tests shall be made from hard-drawn copper. Such conductors shall

Table I

Connector Size	Clamping Force in Pounds	
	Split Bolt Type	Vise Type
8 Sol.	700	700
6 Sol.	1000	1000
4 Sol.	1250	1250
2 Sol.	1500	1500
2 Str.	1750	1750
1/0 Str.	2000	2000
2/0 Str.	2250	2250
4/0 Str.	2500	2500

ards by which the vital qualities of connectors could be judged. Efforts had been made by other agencies to produce acceptable standards but without success. Apparently this failure was due to unavailability of sufficient basic test data.

In the work just concluded extensive tests were made by member companies. These tests covered all phases of electrical and mechanical properties of connectors and conductors. As a result adequate data were provided.

The Technical Committee is continuing the same tests on aluminum-to-aluminum and aluminum-to-copper connections.

The new standards emphasize clamping force as the prime requisite for good performance. This is in contrast to the common practice of many years to accept mechanical torque as the determinant. The committee concluded that mechanical torque is of secondary importance. Institute membership agreed to this.

The institute is made up of the principal American producers of split bolt and vise type connectors. Its Technical Committee consisted of:

Chairman Julian Rogoff, Burndy Engineering Co; Ford Pennell, Jasper Blackburn Corp; Henry Wengen, Fargo Manufacturing Co; L. L. Crump, James R. Kearney Corp; A. Van Ryan, Line Material Co; Charles L. Stoeltzlen, Penn-Union Electric Corp; and John Brown Cook, Reliable Electric Co.

Electrical Connectors for Copper Conductors

be of the construction and of the maximum size the connector is designed to accommodate. Conductors shall be straight without kinks and burrs and shall be reasonably clean.

3. Sampling—A random sample of 12 pieces per size and type shall be taken from each lot of connectors to be tested. Four pieces shall be used for each test. These connectors shall not be used for any other test or returned to the lot.

b. Clamping Force

Clamping force shall be measured by means of a dynamometer type tension measuring device employing suitable yokes to be inserted in the connector. The dynamometer used in this apparatus, and the structure of the device itself, shall be so designed and made that its indications are free of creep and hysteresis.

The radii of the yoke-bar and of the supporting plate shall be equal to the radius of the maximum conductor for which the connector is specially designed.

The nut of the split bolt connector or the bolt of a vise type connector shall be tightened until the dynamometer indicates the clamping force listed in Table I, noting the torque necessary to accomplish this. After reaching the specified clamping force, the connector shall be left undisturbed in the testing device, and the clamping force shall be observed for a period of ten minutes. At the end of this interval, the clamping force shall be at least 90% of the initial value. After removal of the connector from the testing device, it shall be reusable.

c. Torque Strength

Two short lengths of the maximum conductor shall be installed in the connector. The head of a split bolt connector or the body of a vise type connector shall then be gripped in a suitable vise or chuck, taking care that the jaws are only tight enough to hold the connector without distorting it. The torque specified in Table II shall then be applied to the nut of the split bolt connector or the bolt of a vise type connector by means of a torque indicating wrench or other torque indicating device. The connector shall pass this test without failure.

d. Pull-Out

Connectors shall be prepared for this test by installing two 10-in. lengths of proper conductors, applying a tightening torque equal to the average torque that was required to produce the clamping force listed in Table I. The conductors shall overlap each other six times their diameter. The test itself may be performed by means of a tension testing machine or by application of dead weight.

If a tension testing machine is used, tension shall be applied at a steady rate between 0.25 in. and 0.75 inch per minute, (speed of crosshead) until the two conductors are separated. The tension required to accomplish this shall not be less than the values listed in Table III.

If a tension testing machine is not available, the assembly as described above shall be supported on one conductor, and a dead weight of the value listed in Table III for the particular size of connector shall be attached to the second conductor. The connection shall support this weight for a period of one minute without separation of the conductors.

Table II

Connector Size	Torque in Inch-Pounds	
	Split Bolt Type	Vise Type
8 Sol.	120	85
6 Sol.	280	120
4 Sol.	320	200
2 Sol.	360	250
2 Str.	450	250
1/0 Str.	550	250
2/0 Str.	700	250
4/0 Str.	900	300

Table III

Connector Size	Pull-Out in Pounds	
	Split Bolt Type	Vise Type
8 Sol.	120	120
6 Sol.	150	150
4 Sol.	250	250
2 Sol.	300	300
2 Str.	300	300
1/0 Str.	400	400
2/0 Str.	500	500
4/0 Str.	600	600

Whiting Elected Head of AEIC

McCance tells association utilities should reexamine engineering jobs to eliminate all non-technical duties

Justin R. Whiting, chairman of the Board Consumers Power Co, was elected president of the Association of Edison Illuminating Companies at the meeting held at White Sulphur Springs, W. Va., Oct. 13-15.

Other officers selected were G. W. Van Derzee, president, Wisconsin Electric Power Co, vice president; and five executive committee replacements, Willis Gale, president Commonwealth Edison Co; R. G. Rincliffe, president Philadelphia Electric Co; R. R. Dunn, president, Potomac Electric Power Co; Walker L. Cisler, president, Detroit Edison Co, and Philip Sporn, president, American Gas & Electric Co. Those resigning were E. J. Doyle, H. P. Liversidge, A. G. Neal, J. W. Parker, and H. M. Sawyer.

Discusses Manpower Problem . . . P. H. McCance, retiring president of AEIC, urged the utilities to examine the engineering jobs so as to eliminate all non-technical duties. He recommended greater use of high school graduates for the semi-technical activities.

Consideration of an increase reserve in capacity requirements was recommended by McCance. He also proposed more use of employee magazines as a means of discussing current national and economic problems with them, increased emphasis on power plant dedications, and effective use of employee suggestion systems.

Continued support of research projects in an amount running about $30,000 annually was indicated in the report of Secretary-Treasurer F. V. Magalhaes. These projects include effect of temperature upon property of metals, high temperature steam generation, steam contamination, and air pollution.

Reports of the committees pointed out many trends of importance to the industry. The following are significant notes from these reports:

Power Generation, T. E. Purcell, chairman

1. Coal costs per kwhr are back to about what they were in 1924-25.

2. Austenitic metals are indicated for 1,100 deg F, but cheap low-alloy steels are satisfactory up to 1,050 deg F.

3. It would seem like good common sense that an endeavor be made to work out an economical plan whereby some of the manufacturing peaks and valleys could be ironed out (on turbo-generators).

Air Pollution—Policy, A. L. Penniman, Jr, chairman

1. In the purchase of fuel, special consideration should be given to producers who are working to develop by research or other means, fuel particularly adaptable to our needs.

2. Our industry has made an outstanding response to the public demand for freedom from dust nuisance. In general, in the construction of new plants, the electric utilities have gone beyond the requirements of local air pollution ordinances.

Electric Switching and Switchgear, W. F. Wetmore, chairman

1. In survey of 78 utilities and 3 government agencies, 68 had switched capacitor banks, 56 are planning new installations, and 3, who have no switched capacitors, intend to make installations.

2. Most companies feel that low cost switching devices are needed to supplement those available.

3. Studies are continuing on the matter of breaker rating methods. The question as to the use of a symmetrical ratings is an important item.

Power Distribution, K. L. Wheeler for C. J. Beller, chairman

1. It is estimated that there will be 68 lines including approximately 327 circuit miles of pipe-type cable in service at the end of 1952.

2. The Cable Engineering Section is particularly interested in the study of aluminum conductors for underground cables, greater use of buried cables, and temperature limits for pipe-type vs low-pressure oil-filled cables.

Metering and Service Methods, H. H. Marsh, Jr, chairman

There are far too many wiring installations today that must be replaced to serve satisfactorily modern home appliances, and service rules should be developed to avoid needless replacement in the near future. At the same time that we complain of restrictive local municipal regulations, we must, however, be careful not to become so restrictive in our own rules as to discourage use of electricity.

Load Research Committee, C. M. Turner, chairman

1. Philadelphia tests over the years indicated that the trend in diversified demand of the average range was downward between 1937 and 1945 and that between 1945 and 1951, the energy use trended downward. This combination of changes has resulted in an increase in load factor of 3 percentage points between 1937 and 1951.

2. An air conditioning test covering 31 homes in Corpus Christi, Tex., May 1949 to April 1950, indicates an annual load factor of about 23% as compared to one of 3% to 5% for northern climates.

Sales Executive Conference Reports . . . In a report entitled "A Look Ahead on Residential Growth" T. O. McQuiston said a survey of market potentials shows a prospective gain of 1.25 million customers annually for the next five years. He forecast a gain in residential sales of 45 billion kwhr in the same period.

Utilities agree, McQuiston declared, that sale of water heaters, ranges, freezers, and dryers constitutes the major source of growth in energy sales. To offset lower sales volume in new home building, he added, it follows that utilities must direct more of their sales efforts to the replacement market.

Another conference report, "Long Range Forecast of Loads," was presented by R. C. Hienton. He pointed out that of 20 companies surveyed only three make forecasts more than five years ahead; nine only one year ahead. Seven out of 20 firms use economic factors in forcasting he noted. In estimating peak, three companies used historical trend, eight used composite factor to total sales, three considered contribution of major loads, and six determined contribution by each class of service.

Sales Planning Is Keynote . . .

. . . of NEMA's annual meeting, which is set for Nov. 10-13 at Atlantic City. England, EEI president, to address parley

Sales planning will be the keynote of the 26th annual meeting of the National Electrical Manufacturers Association scheduled for Nov. 10-13 at Haddon Hall, Atlantic City, N. J.

"The Electric Industry's Sales Planning for a More Abundant Electrical Living Tomorrow" is the topic Bayard L. England, president of Edison Electric Institute and Atlantic City Electric Co, will discuss at the general luncheon slated for Tuesday, Nov. 11.

Major Appliance Sessions . . . Agenda for the four-day meeting will include three sessions of the Major Appliance Division. Two sessions have also been planned by the Transformer Section. In addition, this section's apparatus standards, technical standards, and planning committees have scheduled sessions.

Attention will be directed toward "farm needs" when the farm wiring subcommittee and farm and rural market development committee hold their sessions. The Farm and Home Freezer Section also plans two meetings.

The Industrial and Commercial Lighting Equipment Section will be active at this annual meeting when it takes part in two sessions. This group has also made arrangements for a dinner and reception.

Switchgear Meeting . . . The Switchgear Section has slated ten meetings. Among the groups which will participate in the meetings will be the automatic circuit recloser, coupling capacitor, distribution cutout, electric power connector, power switching equipment, pressure (solderless) connector, power switchgear assemblies, and power circuit breaker.

50-Year Certificates . . . At the annual luncheon planned for Wednesday, Nov. 12, presentation of NEMA 50-year certificates will be made. Certificates will be presented to the following: L. C. Hart, president, Hi-Voltage Equipment Co; Frank A. Poor, vice chairman of the board, Sylvania Electric Products, Inc; and C. C. Remsen, assistant to the president, Diehl Manufacturing Co. A 60-year certificate will be awarded to W. D. Steele, president, Benjamin Electric Manufacturing Co.

EEI's Labor Conference Scheduled for Nov. 17-19

The fall round table conference of the Edison Electric Institute's Industrial Relations Committee will be held at the Sheraton Hotel, St. Louis, Mo., Nov. 17-19.

One of the highlights of the meeting will be a discussion of the public power question by some of the industry leaders that have been affected by it.

In addition, there will be four sessions for each of the following four discussion subjects:

- Communications
- Supervisory Relations
- Union Relations
- Personnel Relations

CALENDAR

American Institute of Electrical Engineers
Middle Eastern District Meeting, Commodore Perry Hotel, Toledo, Oct. 28-30; Conference on Machine Tools, Ten Eyck Hotel, Albany, Oct. 29-31; Special Technical Conference on Electrically Operated Recording and Controlling Instruments, Benjamin Franklin Hotel, Philadelphia, Nov. 17-18; Winter General Meeting, Hotel Statler, New York, Jan. 19-23, 1953.

Southeastern Electric Exchange
Sales Conference, Thomas Jefferson Hotel, Birmingham, Ala., Oct. 29-31.

Pennsylvania Electric Association
Prime Movers Committee, Hotel Roosevelt, Pittsburgh, Oct. 30-31; Communications Committee, Hotel Syracuse, Syracuse, N. Y., Nov. 6-7; Fall Meeting, Relay Committee, Robert Treat Hotel, Newark, N. J., Nov. 13-14.

National Association of Railroad and Utilities Commissioners
Annual Meeting, Hotel Marion, Little Rock, Ark., Nov. 10-13.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall Hotel, Atlantic City, N. J., Nov. 10-13.

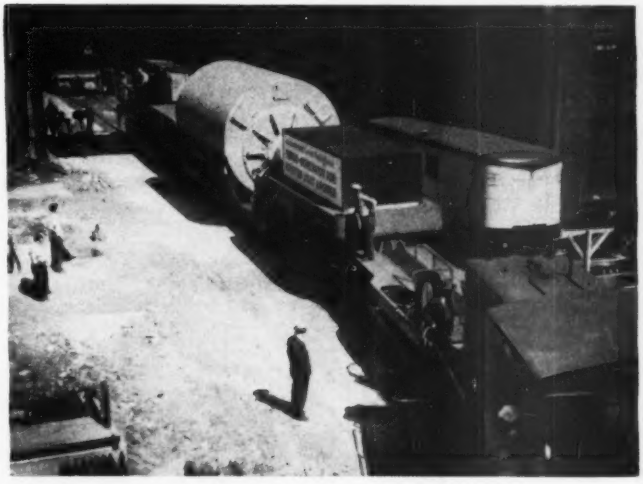
***National Association of Corrosion Engineers**
Western Region, 2nd Annual Conference, Biltmore Hotel, Los Angeles, Nov. 20-21.

American Standards Association
34th Annual Meeting, Waldorf-Astoria Hotel, New York, Nov. 25.

American Society of Mechanical Engineers
Annual Meeting, Statler Hotel, New York, Nov. 30-Dec. 5.

20th National Power Show
Sponsored by American Society of Mechanical Engineers, Grand Central Palace, New York, Dec. 1-6.

* Addition this week.



Generator Takes to the Rails

Railroad car, reported to be world's largest, leaves East Pittsburgh plant of Westinghouse Electric Corp to deliver a 90,000-kw turbo-generator, completely assembled, to Houston (Tex.) Lighting & Power Co.

Illustrated: Moloney Power Transformer FOW (forced oil cooled, with forced water cooled heat exchangers.) The transformer is rated 60,000 Kva with a high voltage of 230,000 GrdY and a low voltage of 13,600.

R I C I T Y

WITH all our progress in this, the 20th Century, we still have no completely satisfactory explanation of what electricity is. Yet . . . we know that electricity has changed the pattern of the world.

Here is this tremendous force, which we can't explain but can control by flicking a switch, in use everywhere, constantly sustaining the industry and life of this nation and the world. Experience, engineering and research have done much to permit the efficient use of this power. Utilities everywhere have come to recognize the importance of Moloney Equipment in transmitting and distributing electrical energy *so economically* and *so dependably.*

ME52-10

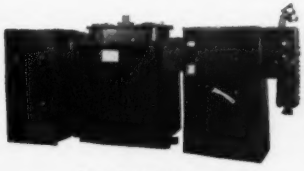
MOLONEY ELECTRIC COMPANY

Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control Transformers • Step Voltage Regulators • Unit Substations

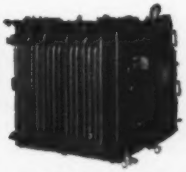
SALES OFFICES IN ALL PRINCIPAL CITIES
FACTORIES AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

Load Ratio Control Transformers

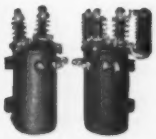
Feeder Voltage Regulators and Regulating Transformers



Load Center Unit Substations



Network Transformers



HiperCore Distribution Transformers

MOLONEY ELECTRIC = BETTER PERFORMANCE / GREATER RELIABILITY / LESS MAINTENANCE

PORTION of the first-night crowd of factory operators passing by the serving table. Kitchen is in the background

Industrialists, Educators, Restaurateurs Get the Electric Idea

Union Electric Co, St. Louis, tells lighting, commercial cooking stories to three customer groups at meetings in new service building

All-electric promotions have been given another dimension by Union Electric Co, St. Louis. Gimmick was a series of meetings held last month demonstrating advantages of electric cooking and good lighting to three customer groups: (1) Factory operators and personnel directors; (2) school officials and lunch program directors; and (3) restaurant owners and managers.

Cooperating with the utility's sales department in the three-night promotion was the commercial cooking equipment department of Hotpoint, Inc, and Factory Stores, Inc, an in-plant feeding organization. On successive evenings they invited the three groups to Union Electric's new $2½ million service building for: (1) A factory-feeding forum; (2) a school lighting and feeding clinic; and (3) a "Restaurant Idea Round-Up."

The factory, school, and restaurant people heard experts in their respective fields tell their experiences in planning, building and operating all-electric commercial kitchens, and adequate lighting programs.

Factory Men Turn Out . . . The factory-feeding forum was attended by some 430 factory executives in the power company's service area interested in adequate hot lunch facilities for their plants. They heard how the right kind of employee food service operation can increase production, improve employee relations, reduce absenteeism, and build better morale.

Featured were two speakers and a five-man panel. Setting the pace for the others was Orrin E. Wolf, Hotpoint vice president, who advised more attention to kitchen layout. He stated that "in far too many instances the kitchen is what is left over after providing what is thought to be a satisfactory serving area."

He also called for use of highly specialized electrical equipment, such as deep fat fryers, and of small or intermediate capacity equipment because of the "variable load conditions experienced in a commercial kitchen."

Panel members were drawn from local industries which have operated successful and varied applications of employee feeding. One spoke on problems of providing lunches for continuous production employees; another on the success of his firm's operation on a "mandatory" basis; and

a third described how his plant provides food service in a building lacking permanent facilities and space by using mobile feeding carts.

Summarizing the session was Arthur B. Dressiger, general manager of Factory Stores, who emphasized that 95% of his company's feeding installations in the past four years have been electric. He cited as reasons that electrical equipment had better heat control and was more adaptable to installations where remodeling was necessary.

The panelists then addressed themselves to a series of 32 questions submitted beforehand by the guests. They ranged from the benefits of electric cooking to power demands and energy consumptions of industrial cafeterias, and how to train kitchen personnel to change from gas to electric cooking.

A FEW of the factory people and their wives pass through viewing some of the electrical equipment in the kitchen designed to feed 750 employees

Electricity in Schools . . . On the second evening, visitors heard a panel moderated by Dr. Arthur Rice, editor of Nation's Schools, discuss school lighting and cooking. Among the panelists was Morris V. Harman, Union Electric's school lighting consultant, who described specific modernization programs for schools.

Panel members based their speeches on another series of questions submitted by those in attendance. Among them was information on the minimum equipment needed for weekly use in church kitchens, the effect of neon lighting in reducing eye strain, and fluorescent as the answer to artificial classroom lighting.

Two films were also shown. One, consisting of film slides shown by Lighting Consultant Harman, portrayed what remodeling of lighting layouts in Keokuk, Iowa, schools did to minimize eye strain and fatigue among students. The other showed what the community of New Hartford, Conn, has done to streamline its school feeding program by installation of an all-electric commercial kitchen.

Repeat Program . . . The "Restaurant Idea Round-Up," featured an original show presented by Hotpoint. Star was "Big Sam, the harassed restaurateur's friend." Combining informative material about electrical appliances with fast-moving dialogue, "Sam" was a big hit with the more than 400 restaurant people attending.

Impressive Layout . . . Not the least of the attractions to the 1,200 who crowded in during the three nights was the electrically-cooked dinner, and the tour of the kitchen that preceded it.

V. C. Brennan, vice president and director of personnel and industrial relations for Union Electric, emphasized on the first night that the cafeteria was designed for the primary purpose of providing food service for the 750 employees in the building. That this was a simple matter with the vast, efficient electrical outlay in the kitchen was perhaps the most obvious fact that visitors carried away with them.

SCHOOL LIGHTING and cooking panelists listen as Dr. Arthur Rice, editor of Nation's Schools, opens the discussion

More Than 94% of Employees Surveyed are Covered

Type of benefit	Number of plans	Number of employees: In establishments providing specified benefit	Number of employees: Covered for specified benefit	Percent: All employees in survey	Percent: Employees in establishments providing specified benefits
Total	...	287,740	270,700(a)	94.1	...
Retirement	153	284,010	226,890	78.9	79.9
Hospitalization	154	255,080	223,470	77.7	87.6
Surgical	145	246,025	189,040	65.7	76.8
Other medical care	67	135,875	111,290	38.7	81.9
Sickness and accident	69(b)	117,415	95,050	33.0	81.0
Sick leave	117(c)	225,055	202,030	70.2	89.8
Life insurance	160	280,050	253,500	88.1	90.5
Accidental death and dismemberment	48	54,370	42,210	14.7	77.6

(a) For some type of benefit.
(b) Includes 44 plans providing paid sick leave also (67,050 covered for sickness and accident benefits).
(c) Includes 44 plans providing sickness and accident benefits also (72,350 covered for sick leave).

Employee Benefit Plans . . .

. . . protect electric and gas workers in illness, accidents, and old age; families get death benefits, FSA survey shows

Slightly over 94% of employees in the electric and gas industries surveyed by the Federal Security Agency are protected by some type of employee benefit plan.

The survey covered 287,740 workers in 240 establishments of 157 companies. Of these 270,700 had one of the eight benefits listed in the box above. Almost all (266,875 or 92.7%) had three or more types. The published title of the survey is "Employee-Benefit Plans in the Electric and Gas Utility Industries."

Most of the plans were financed through joint employer and employee contributions. Hospitalization and medical benefits and sickness benefits were frequently financed entirely by the employees.

Retirement . . . Of the 153 retirement plans, 76 were contributory, financed jointly by employer and employees; 65 were noncontributory, financed by the employer only; and 12 combined both contributory and noncontributory features. Only nine plans were more than 20 years old in 1950.

Hospitalization . . . More than three-fourths of the total of 154 plans provided "cash benefits." That is, the insurance indemnified the individual in cash, usually at a specified rate for each day of hospitalization for a maximum number of days, and for certain other hospital expenses.

Surgical . . . Of 145 plans providing surgical benefits, 93 provided cash benefits; 33 provided a combination of service and cash benefits; 7 gave service benefits, and for 12 there were no details available.

Other Medical Care . . . Sixty-seven plans, covering 111,290 employees, provided medical care benefits in addition to hospitalization and surgery. Of these, 46, covering more than 55,000 employees, provided cash indemnities for physicians' fees up to a specified amount per visit.

Sickness and Accident . . . The 69 plans providing sickness and accident benefits covered 95,050 of the 287,740 employees in the survey. Of the 69 plans, 56 were underwritten by commercial insurance companies.

Sick Leave . . . The 117 sick leave plans covered 202,030, or 70% of the employees. Nearly all the plans (104 of 117) required a specified period of service with the company, usually 6 months or a year, before the employee became eligible for benefits.

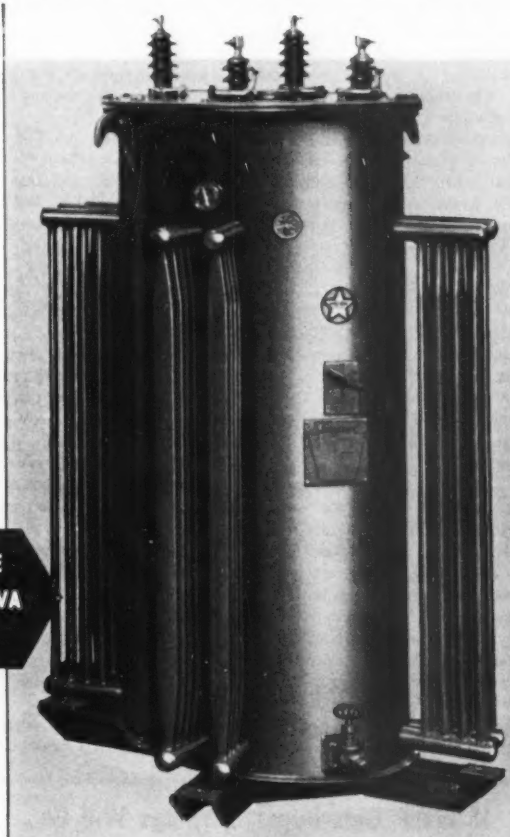
Life Insurance . . . Life insurance plans were in effect in establishments employing 280,050 of the 287,740 included in the survey. They were found in 234 establishments owned by 151 of the 157 firms in the survey, and covered 253,500, or 90.5% of all employees in the establishments with life insurance plans. Of the 160 plans studied, 94 were contributory, 19 were noncontributory, and 47 had both contributory and noncontributory features.

Accidental Death and Dismemberment . . . This insurance sometimes called "double indemnity," is provided in connection with life insurance, and the benefit is payable in addition to the amount payable under life insurance plans. It is not automatically a part of group life but is a separate policy. The premium is very low, usually 10¢ per month per $1,000.

A TON of Copper, Oil and Steel saved in NEW 500 kva POLE STAR

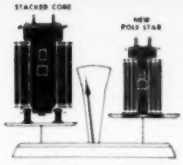
YES, the new 500 Kva Pole Star weighs 2200 pounds less than the 500 Kva stacked core transformer it replaces. This means that vitally-needed supplies of copper, steel and oil are saved in the manufacture of Pole Star transformers without sacrificing any of the efficiency or life of these transformers. On the contrary, the smaller and lighter-weight Pole Star transformers are more efficient and more economical to operate, in addition to being less costly to store and easier to install.

Pound for pound and inch for inch, the Pole Star delivers more Kva than hot-rolled steel stacked core distribution transformers. This means you can replace your small Kva transformers with larger Kva Pole Stars with little or no increase in size or weight, and, in most cases, at very low changeout cost.



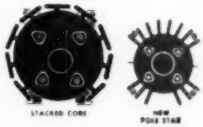
HERE'S HOW THE NEW 500 KVA POLE STAR COMPARES WITH THE OLD 500 KVA STACKED CORE TRANSFORMER

Exciting Current reduced 75%



Weight reduced 2200 pounds

Oil Volume reduced 35% 125 gallons



Floor Area reduced 20%

PENNSYLVANIA POLE STAR TRANSFORMER

Pennsylvania TRANSFORMER COMPANY

BOX 330, CANONSBURG • PENNSYLVANIA

Greater Pittsburgh District

FINANCIAL

Merger Would Up Earnings . . .

. . . according to W. C. Gilman & Co study of Washington Water Power proposal for purchase of Puget Sound P&L

If Washington Water Power Co and Puget Sound Power & Light Co are to merge, earnings could range from $1.95 per share in 1953 to $2.73 by 1955, a study by W. C. Gilman & Co, engineers in New York City, has revealed.

The estimate is on the basis of varying number of common shares to be outstanding depending upon the number of shares Puget stockholders will take under the cash option included in the acquisition proposal submitted by WWP under date of Oct. 9. (EW, Oct. 20, p 90).

No Acknowledgement . . . WWP said in an advertisement in "The New York Times" on Oct. 20 that WWP has received "no acknowledgment of its proposal." This ad was addressed to the stockholders of WWP and was about WWP's proposal to Puget Sound P&L and its officers and directors.

This ad urged the Puget Power stockholders to vote "no" on the sale to six PUD's at the meeting scheduled for Oct. 27 in Boston.

In arriving at these estimated earnings, the following assumptions were made:

1. Shares of Puget purchased under the option ranging from 500,000 to 1,088,940 (maximum possible).

2. Bank loan at 3¼% to provide the necessary cash to pay for Puget stock purchased by Washington.

3. Assumed federal income tax rate of 52%.

4. Requested rate increase of Washington granted on Jan. 1, 1953.

5. Common dividends on the basis of a pay-out of 90% of the estimated net earnings for the common stock of the merged company.

Tax Savings . . . The estimated earnings do not reflect, W. C. Gilman said, the annual tax savings of $2.6 million to be realized by WWP (in the years 1953-1957, inclusive) from accelerated amortization of the Cabinet Gorge project. Such tax savings would amount to 65¢ per share on the common stock of the merged company on the basis of assuming that 500,000 shares of Puget common would be purchased under the cash option, and to 76¢ per share on the assumption that all of the Puget common stockholders exercise the cash option and 1,088,940 Puget shares are purchased.

W. C. Gilman concludes the report by saying, "We are convinced that the acquisition offer is fair and reasonable, and is attractive and will be mutually beneficial to the stockholders and other security holders of both companies. We also feel that the proposal is for the best interests of all other parties concerned, including the customers, employees and the public generally."

Puget Sound's Pres Frank McLaughlin, in a message to Sen Warren G. Magnuson (D-Wash.), said federal authorities should investigate "The extent to which electric utility companies and certain investment bankers are conspiring with WWP to sabotage the six-district purchase by:

1. Seeking to prevent the necessary two-third stockholder acceptance . . . by confusing, intimidating or coercing Puget's stockholders

2. Attempting to block the formation of an underwriting group to finance the six-district acquisition

3. Instigating any nuisance suits."

WWP's Pres Kinsey M. Robinson claims the following advantages for a merger with his company:

- The shareholders of each company would retain an interest in a larger and stronger company, with prospects of increased dividends and greater value of their stock.
- The stronger merged company would be able to provide additional and adequate, generating and other facilities in an area where there is a continuing and growing need for electric power.
- Puget shareholders who exchange their stock solely for WWP stock would do so on a tax-free basis whereas if they received cash as the result of a sale to PUD's followed by liquidation, they would be subject to income tax on any profit realized.

If WWP Gets Puget, Earnings Will Be . . .

No. of Shares of Puget Purchased Under Cash Option	No. of Shares Outstanding of Merged Company	Per Share Merged Company 1953	1954	1955
500,000	4,020,290	$1.95	$2.18	$2.40
600,000	3,920,290	1.99	2.22	2.45
700,000	3,820,290	2.03	2.26	2.50
800,000	3,720,290	2.07	2.31	2.56
900,000	3,620,290	2.11	2.36	2.61
1,000,000	3,520,290	2.16	2.42	2.67
1,088,940	3,431,350	2.20	2.47	2.73

Estimate Prepared by W. C. Gilman & Co.

PUC Grants Pacific G&E $30.6 Million Rate Boost

An increase in electric rates totalling $30,642,000 annually in 46 northern and central California counties was granted to Pacific Gas & Electric Co by the California Public Utilities Commission.

The 16% overall rate increase will hike the monthly bills for domestic customers about 80¢, effective Nov. 10.

PG&E had applied for a 22% increase which would have boosted gross yearly revenue $45,704,000, but the commission reduced that amount by $12,714,000.

PUC also granted the utility permission to open negotiations of special contracts, which could add another $2,348,000, eventually boosting the total gross yearly increase to $32,990,000. Unless PG&E can renegotiate these contracts, it will have to bear the loss.

FINANCIAL BRIEFS

Secondary Offering—Blyth & Co has sold 3,000 common shares of Public Service Co of Northern Indiana at 26¾.

Private Sales—Rumford Falls Power Co has sold $1.2 million debentures 4s of 1961-72 and $800,000 notes 3½s of 1953-60.

Utah Power & Light Co has purchased the distribution system at Airbase Village for $20,000 . . . **Montana Dakota Utilities** has received Federal Power Commission approval to borrow $4 million in notes from National City Bank . . . **Duke Power Co** stockholders have approved a 3-for-1 stock split and increased the capitalization from 1.5 million shares to 5 million.

Stockholder Subscriptions—Iowa Public Service Co offering of 150,122 shares to its stockholders on 1-for-8 basis at $21 per share to yield 6.67% has been oversubscribed.

Securities and Exchange Commission has ordered a hearing on Oct. 28 on whether certain of the electric, gas and non-utility properties of Northern States Power (Minn.) are retainable as part of the Northern States system under Section 11 (b) (1) of the Holding Company Act.

Cleveland Electric Illuminating Co will offer 557,895 common shares on 1-for-5 basis to the commonholders of 2,789,476 shares. The record date will be Nov. 24 and will expire about Dec. 19. The price of the proposed stock will be set in mid-November.

REGULATION

Independence, Mo., City Council has voted to reduce the electric discount rate for schools from 50% to 25% . . . Roger A. McShea, Jr, director of rates and research bureau of Pennsylvania Public Utilities Commission, has resigned.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1952									
Oct. 16	**3.01**	**3.07**	**3.18**	**4.11**	**4.29**	**4.62**	**5.31**	**5.66**	**6.13**
Oct. 9	3.00	3.03	3.17	4.10	4.27	4.59	5.23	5.60	6.03
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47
4th 1951	3.02	3.07	3.21	4.32	4.50	4.91	5.42	6.18	6.84

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
Carolina Power & Light	12	Sept.	$6,870,834	$6,397,200	$	$
Minnesota Power & Light	12	Sept.	3,294,172	3,323,715	3.16	3.20
Ohio Edison, consolidated	12	Sept.	15,251,344	14,301,338	2.81(a)	2.84(a)
Pacific Power & Light	12	Aug.	4,210,255	3,320,017		
Pennsylvania Power	12	Sept.	2,026,126	1,726,554		
Prentiss County (Tenn.) Electric Power Association	12	June	96,675			
South Carolina Public Service Authority (Santee Cooper)	12	June	581,148	857,337		

Notes—(a) Based on an average of 4,798,460 outstanding shares in 1952 and 4,543,997 shares in 1951.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF OCTOBER 16-22			
Bonds			
Carolina Power & Light — 1st mtg 3⅛% 1982	$20,000	101.305%	3.43%
Virginia Electric & Power — 1st mtg 3¼% 1982	20,000	101.541	3.17
Common Stock			
Sierra Pacific Power — 26,775 sh (being offered preferred holders on 1-for-6 basis and commonholders on 1-for-12 basis, record Oct. 6 to expire Oct. 20)	$616	$23.00	6.96
WEEK OF OCTOBER 23-29			
None			
SCHEDULE FOR NOVEMBER TO DECEMBER			
Bonds			
Long Island Lighting — 1st mtg 1982	$20,000		Nov. 17
Gulf States Utilities — 1st mtg 1982	10,000		Nov. 24
New Orleans Public Service — 1st mtg 1982	6,000		Dec. 15
Common Stock			
Hawaiian Electric — 50,000 sh (being offered commonholders on 1-for-10 basis, record Oct. 3 to expire some time in November; no underwriting)	$1,000	$20.00	10.00%*
Duquesne Light — 250,000 sh†			Nov. 20
UNSCHEDULED AND UNDER CONSIDERATION			
Bonds			
Central Maine Power — 1st general mtg	$6,000		
Kansas City Power & Light — 1st mtg	12,000		
California Electric Power — 1st mtg	10,000		
Toledo Edison — 1st mtg	7,500		
Central Hudson Gas & Electric — 1st mtg	6,000		
Florida Power Corp — 1st mtg	15,000		
Common Stock			
Central Maine Power	$5,000		
Toledo Edison — 500,000 sh			

Notes—* Dividends are subject to 2% Hawaiian withholding tax. If this tax is deducted, the yield would be 9.80%. † 170,000 shares will be sold by Philadelphia Co and 80,000 shares will be sold by the company as "new money."

For second time in last two years, Vermont Supreme Court has supported Citizens Utilities Co in its four year dispute with Vermont Public Service Commission over higher electric rates. The court ruled "in computing allowances for federal income taxes the commission shall use no percentage of interest on long-term debt, amortization of debt discount and expenses and other interest charges lower than those claimed by citizens in its exceptions to the commission's findings." Company officials stated that effects of this decision on rates, revenues, earnings and revenues collected under bond will all require considerable study.

THIS CONCRETE SAUCER, 179 ft in diameter and 42 ft deep, is the foundation for the 225-ft steel sphere that will house a nuclear submarine power plant being built by the Atomic Energy Commission for the Navy near Schenectady, N. Y. The project is under the direction of the Knolls Atomic Power Laboratory, which is operated by General Electric Co for the AEC

Saucer Base for Power Plant . . .

. . . is completed. Foundation will support sphere which is to house nuclear submarine reactor. GE operates AEC project

General Electric Co and the Schenectady Operations Office of the Atomic Energy Commission have jointly announced that the saucer-shape foundation for the 225-ft steel sphere that is to house a nuclear submarine power plant being built by AEC for the Navy has been completed. In addition, work on assembling the hull of the land-based prototype submarine is underway.

This project, known as the Submarine Intermediate Reactor (SIR), is under the direction of the Knolls Atomic Power Laboratory operated at Schenectady for the AEC by General Electric. The reactor, the sphere surrounding it, and associated buildings are being built on a 4,000-acre site at West Milton, N. Y., about 18 miles north of Schenectady.

Provides Added Protection . . . Spherical design of the air-conditioned reactor building was adopted to provide additional protection to operating personnel and to off-site areas during test operations beyond the many safety controls of the reactor itself. In the event that simultaneously all other controls failed, resulting release of radioactive material would be contained in the sphere which will have a net "free" space of more than 5.4 million cu ft.

Outer periphery of the building will be 706 ft. The sphere will rest on the concrete saucer just completed which is 179 ft in diameter and 42 ft deep. A ring of steel columns set on concrete outside the structure and reaching to the middle of the sphere will give further support to the building. Welded steel plates will make up the skin of the ball. Plates will be hoisted into position by a derrick mounted on top of a temporary central steel tower. The derrick, now in place, reaches up 424 ft above ground level.

Welds X-rayed . . . To assure that there are no leaks, every weld in the structure must be X-rayed. To accomplish this on the bottom, a four-foot space is provided temporarily between the base of the sphere and the concrete saucer. After testing is finished, this space will be filled with concrete and aggregate. Inside, the concrete floor on which the reactor will rest will be slightly above ground level and the well of the saucer beneath the floor will be filled with compacted mixture of aggregate and earth.

When the columns are in place, the first ring of plates will gird the sphere at its center and assembly will proceed both upwards and downwards.

In the meantime, the submarine's hull will be assembled just outside the building and when completed and tested, the hull will be skidded into the huge ball through a special wall section and the sphere again sealed.

SIR is one of two nuclear science approaches being made to the problem of utilizing atomic fuel for underwater ship propulsion. The other is incorporated in a project at the National Reactor Testing Station in Idaho.

The West Milton reactor will use liquid sodium metal to take the heat out of the reactor core and into an exchanger or "boiler" where water will be converted to steam. The steam will drive the turbines that propel the submarine.

Refined Copper Stocks Drop During September

Stocks of refined copper held in the United States by members of the Copper Institute, Inc, at the end of September totaled 71,456 tons, a decrease of 12,315 tons below the 83,771 tons held on Aug. 31.

During September deliveries to domestic fabricators increased to 134,689 tons compared with deliveries of 127,106 in August. Refined production increased to 98,930 tons from 95,366.

Outside the United States refined stocks amounted to 157,450 tons on Sept. 30, a drop of 9,881 tons below the 167,331 tons on Aug. 31. September deliveries increased to 83,784 tons from 73,695 in August and refined production was 96,511 tons compared with 98,682.

Railway-Mounted Power Plant Ordered by Army

Westinghouse Electric Corp has been awarded a contract in excess of $1 million by the Army Corps of Engineers for the construction of a railway-mounted gas turbine power

(*Continued on page* 48)

PARKWAY CABLE

Save the cost of duct systems!...with the most dependable Parkway Cable you can buy!

ROEBLING'S research staff is continually working at the job of product development. Our manufacturing facilities and techniques are constantly improved. That's why our Parkway Cable for distribution and general power supply circuits is today even more dependable than ever before.

Roebling Parkway Cable saves money right from the start because it is buried directly in a shallow, low-cost trench. It is made in single and multiple conductor – solid or stranded – in a range from 600 to 5,000 volts . . . furnished with metallic armor or a non-metallic *Roeprene* sheath, depending on the physical protection required. Types that pass all C.A.A. requirements for Specification No. L-824 for airport lighting are also available.

Large quantities of Roebling's full line of electrical wires and cables are needed in the rearmament program. We and our distributors will do everything possible, however, to meet your requirements. John A. Roebling's Sons Company, Trenton 2, N. J.

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 2253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST & 120 S. HEWITT ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • PITTSBURGH 1301 CLARK BLDG • ROCHESTER, 1 FLINT ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY

DOWNTOWN AREA of Beaumont, Texas, now enjoys the better continuity and uniformly good voltage of a secondary network. Workmen above are installing new 500-kva G-E network unit on Tevis Street between Pine and Travis Streets.

Beaumont installs a network to handle heavy load growth

Installation of this G-E network unit illustrates only step that will be needed in future to add new distribution capacity

As today's rapidly expanding urban loads make it difficult to perpetuate radial systems, more and more electric utilities install secondary networks.

They find that, once installed, a network gives them complete flexibility for solving load growth problems —on an orderly step-by-step basis—without any rearrangement of secondaries or service entrances.

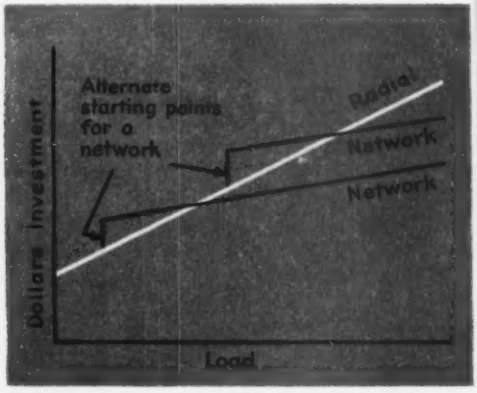
In Beaumont, Texas, for example, the Gulf States Utilities Co. found that it required extensive engineering calculations, juggling of existing loads and bolstering of circuits to meet increased loads in the downtown area. As a result it retired its radial system in favor of a network.

NO MORE LOAD GROWTH "HEADACHES". Now, when rising loads require additional capacity, all that will be necessary will be additional network units. With a network, service connections and low-voltage connections are provided initially thus eliminating any need for rearrangement or re-enforcement when a new transformer is added.

HELP FOR YOUR SYSTEM. If you, too, are struggling to accommodate new loads by perpetuating a radial system and your load density has risen to approximately 10,000 to 15,000 kva per square mile, it may be time for you to investigate the flexibility and economy of a secondary network.

For help in solving your network problems, and for complete information on the many advantages of G-E standardized network units, get in touch with your local G-E Apparatus sales office. Or write to Section 402-129 for Bulletin GEA-5024. General Electric Company, Schenectady 5, N. Y.

VAULT SIZE MINIMIZED when you install G-E standardized network equipment since both high- and low-voltage cable terminals are well below the top of the transformer. Vault depth need be only 7 feet to roof slab to provide sufficient room for maintenance and inspection.



IT PAYS TO START A NETWORK. Although the change from a radial system to a network system means some initial expense, future increases in capacity require less investment with a network. And with a growing load, the sooner the network is started, the lower the ultimate cost.

GENERAL ELECTRIC

(Continued from page 44)

plant. Destined to be used as an advance power generation unit in devastated areas, the plant will be contained in two non-self-propelled railway cars.

The generator car will contain a 5,000-kw, 5,700-rpm gas turbine designed to burn diesel oil; a geared speed-reducer to drive the generator at 3,600 rpm for 60 cycle power, or at 3,000 rpm for 50 cycle power; a 2,400-v, ac generator; generator exciter; and a starting motor for the gas turbine.

Known as the transformer-control car, the other car will house a multivoltage transformer, with output ranging from 2,400 v to 15,000 v; high and low voltage switchgear; and two diesel generators for auxiliary power, one of which will supply the starting motor.

MANUFACTURING BRIEFS

Production of primary aluminum in the United States set a new postwar record when August output reached 170,350,658 lb, the Aluminum Association has reported. August output represented a gain of 12.5% over July production when 156,735,591 lb were produced.

Minneapolis-Honeywell Regulator Co will open a new manufacturing operation in Minneapolis within 60 to 90 days for expanded defense production. Honeywell has leased a 38,000-sq ft building from the Alexander Smith Carpet Co and will convert the structure for production work. It will become Honeywell's eighth manufacturing plant in Minneapolis.

General Electric Co will now manufacture all its fluorescent lamp ballasts at the company's Danville, Ill. plant instead of at Fort Wayne, Ind., home of GE's specialty transformer and ballast department. The move, in keeping with GE's program of decentralization, is expected to improve service and provide more direct routing of ballast orders to the point of manufacture.

Frigidaire Co of Canada, a subsidiary of General Motors Corp, has officially opened its $11-million plant at Scarborough Township, just outside Toronto, Ont. The plant has more than 2,000 employees.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Arkansas—U. S. Eng., 300 Broadway, Little Rock, repair Main Unit 2, turbine buckets, Norfolk Dam Power Development, White River Watershed, North Fork River, Serial No. CIVENG 03-050-53-18.

Calif., San Diego—Airfan Radio Corp., Ltd (KFSD) 326 Broadway, television station, $730,000.

Colo., Denver—Metropolitan Television station, $521,000. Frank G. Kear, 1302 18 St. N.W., Wash., D. C., consult. engr.

Idaho—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., three 115-kv, 600 amp, disconnecting switches, 9 lightning arresters and 553 insulators for Albeni Falls Power Plant, Inv. 53-26; 2 battery-charging motor-generator sets for Albeni Falls dam, Inv. 53-28.

Ia., Fort Dodge—Northwest Television Co., 912 First Ave. S., plans by Frank Griffith Ft. Dodge, television station, $240,200. Commercial Radio Equipment Co., 1319 F St. N.W., Wash., D. C., consult. engr.

Kan., Merriam—Western Electric Co., c/o T. C. Morris, br. mgr., 3533 Roanoke Rd., Kansas City, Mo., 260,000 sq. ft. distribution warehouse, $1,500,000.

Ky., Paris—Bd. City Comrs., improv. power plant, $350,000.

La., Shreveport—U. S. Eng., 300 Broadway, Little Rock, Ark., Job No. AFB 52-ACFB-AF electrical distr. sys., Barksdale Air Force Base, CIVENG 03-050-53-6.

Me., Limestone—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., roads, walks, utilities, Limestone Air Force Base, Eng. 19-016-53-3, $2,000,000-$5,000,000. Plans deposit $50. Extended date.

Mass., Bridgewater—State, Dpt. Correction, State House, Boston, P-501 power plant renovations, State Farm, $180,000. Richard D. Kimball Co., 6 Beacon St., Boston, consult. engr.

Minnesota—Co-operative Light & Power Assoc. of Lake County, Two Harbors, 120 mi. rural distr. lines, sys. imprvs., Lake Co., $415,000.

Miss., Biloxi—U. S. Eng., Box 1169, 2301 Grant St., Mobile 7, Ala., electronics laboratory at Keesler Air Force Base, Inv. 53-2.

Missouri and Arkansas—U. S. Eng., 300 Broadway, Little Rock, Ark., 272 ft. high Table Rock Dam on White River for flood control and power, $80,000,000. ($3,000,000 appropriated).

Nebraska—Elkhorn Rural Public Power Dist., Battle Creek, 20.6 mi. rural distr. lines, Madison and Antelope Counties, $100,000. H. A. Nixon Eng. Co., W. O. W. Bldg., Omaha, engr.

N. Y., Fort Totten—U. S. Eng., 30 Lafayette St., New York, Zone 13, electric distr. sys., $100,000. Foster & Cafarelli, 44 Whitehall St., New York, Zone 5, archts.

O., Toledo—Toledo Edison Co., Edison Bldg., 125,000 kw electric generating station, high pressure boiler, turbo-generator, condenser, switching and substation equip., coal-handling equip., railroad trackage and ash disposal, on 400-acre site near Maumee Bay shore east of Harbor View, bounded by Wynn, DuPont and Cedar Point Rds. and Maumee Bay, $25,000,000. Paul H. Gravelle, c/o owner, engr.

Pa., Washington—Manufacturers Light & Heat Co., Union Trust Bldg., Pittsburgh, 1 story, steel, brick, block warehouse, offices and service bldg., near here, $1,500,000. John J. Reitz, 421 Market St., Steubenville, O., archt.

R. I., Newport—P. Wks. Dpt., Naval Base, rehabilitate Transmission Line No. 2209, NOY 73819, Spec. 34856. Plans deposit $10.

S. C., Florence—Jefferson Standard Broadcasting Co., c/o Melvin Purvis, Florence, television station, $500,000.

South Dakota—Rosebud Electric Assn., Gregory, 128.54 mi. rural distr. lines, in towns of Dallas, Herrick, Fairfax, Colome and Gregory, and in Counties of Gregory, Tripp and Lyman, Raymond H. Reed & Co., Columbus, Neb., engrs.

Tennessee—Cumberland Electric Membership Corp., Clarksville, 324 mi. rural distr. lines and sys. imprvs., Montgomery Co., $1,575,000.

Low Bidders & Contracts Awarded

Colorado—Hoak Constr. Co., 621 63 St., Des Moines, Ia., CA, $565,082, est. $600,000, 513 mi. rural distr. lines, Trinidad, Southeast Colorado Power Assn., La Junta, Colo. Bids Sept. 19, awarded Sept. 26.

Ga., Rome—George A. Fuller Co., 597 Madison Ave., New York, N. Y., CA, $12,000,000, transformer plant, General Electric Realty Corp., Box 1221, Rome, Ga. Bids Sept. 17.

Ill., Chicago—Wm. Lambert, 8851 N. Overhill Dr., Chicago, Ill., CA $100,000, 12,000 sq. ft. factory, Westco Electric Co., 5310 Milwaukee Ave., Chicago, Ill. Frank L. Glick, 3938 N. Central Ave., Chicago, archt. Awarded Oct. 1.

Md., Baltimore—Kirby & McGuire, 2518 Greenmount Ave., Baltimore, Md., CA $150,000, brick, rein. con., steel electric distribution center, roads, Churchville Rd., near Bel Air. Consolidated Gas, Electric Light & Power Co., Lexington Bldg., Baltimore, Md.

Mississippi—Mississippi Power & Light Co., 144 S. Congress St., Jackson, Miss., Owner Builds. Est. $100,000. 115 KV electric power transmission line across Big Sunflower River, Vicksburg.

Ohio—Ohio Power Co., 301 Cleveland Ave. S.W., Canton, O. and Central Ohio Light & Power Co. (East Div.) Findlay, O. Own Forces. $1,005,500. 29 mi. 132,000 volt transmission line from Canton to Wooster, with 25,000 kva sub-station at Wooster, addnl. equipment at Torry Station.

Oregon—Northeastern Mfg. Co., Redford St., Manchester, N. H. LB 275,540 main control switchboard, Lookout Point Dam, Lane Co., Civeng 35-096-53-26. U. S. Eng., Pittock Block, Portland, Ore. Bids Sept. 11.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Ala., Troy—City, high school, $2,000,000.

Ga., Waycross—Ware Co., plans by Gregson & Ellis, Mortgage Guarantee Bldg., Atlanta, hospital, $1,000,000.

Ia., Davenport—Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa., aluminum rolling mill, $6,500,000. T. D. Jolly, c/o owner, ch. engr.

Ky., Owensboro—Kentucky Wesleyan College, Owensboro, 2 dormitories (2nd unit); chapel, auditorium and library; 2 dormitories (3rd unit) gymnasium, $4,000,000.

S. C., Greenville—Furman University, President's Office, Greenville, plans by Perry, Shaw & Hepburn-Kehoe & Dean, 21 St. James Ave., Boston, Mass., college group, $23,000,000.

Low Bidders & Contracts Awarded

Mont., Kalispell—Wixson & Crowe, Inc., Redding, Calif., CA Est. $45,000,000, Aluminum plant, Columbia Falls. Anaconda Copper Mining Co., 25 Broadway, New York, N. Y. Wilbur Jordan, c/o owner, engr.

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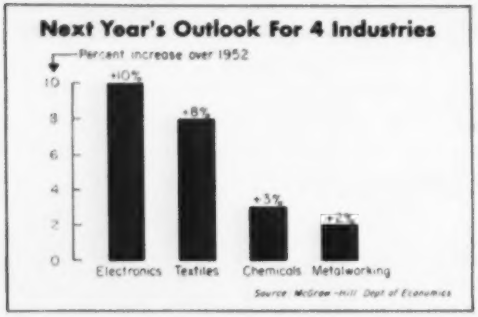


Industrial Production Zooming

FRB index of 223 in September is expected to reach peacetime high in next few months

Industrial production is rising fast. In September, the Federal Reserve Board's industrial production index hit the highest point since the end of the war. Production has snapped back sharply after a 13% decline that was spread over six months and culminated in the great steel strike.

Production will set new peacetime records over the next few months. Rising defense spending, a record rate of capital spending by business, and recovery in one consumer industry after another may push the index as high as 228 or 230 before it levels off. It stood at 223 in September.

Production won't hold at that level through 1953. It's likely to drop off in the spring when capital spending by business and output of some consumer goods industries—like textiles—are expected to suffer declines. And the index will get less of a boost from defense work when defense spending levels off after midyear.

The overall monthly average for 1953 may range around 223—about 3% better than the expected average for 1952. But this overall average conceals completely different prospects for a number of industries. Some will do much better in 1953 than they did this year. And there's a very good chance that some will not do quite so well as they did in 1952.

Best Prospect: Military Production . . . Industries producing military equipment are mostly likely to show big gains over 1952. Spending for defense in 1953 will amount to about $56 billion ($51 billion this year), and the main increase will be in procurement of weapons. The aircraft industry should boost production 10% or more, and electronics will gain about as much. And so will other industries that sell large shares of their output to the military.

Companies that supply defense production lines with equipment and materials will gain too, but not as much. Industries in this category—with probable gains of from 2 to 5%—include metalworking, metal mining other than iron ore, chemicals. There will be big variations even within each of these major industries. In metal mining, for instance, extraction of copper is likely to rise substantially while ouput of lead and zinc may drop.

Industries that have been slumping or having trouble with strikes or government restrictions should make big gains in 1953. Textiles, for instance, are just recovering from a slump that lasted more than a year. Production may show an 8% or more gain. Total steel production for the year may rise 20% or more unless there is another strike, and iron ore output will rise with it.

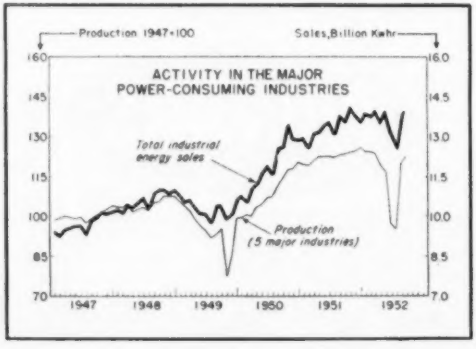
Appliance Outlook Is Good . . . The outlook for electric appliance sales is good. The public will probably take more now that Regulation "W" no longer restricts consumer credit—or so the sales since credit controls died indicate. Production of major appliances might go up 10% and some appliances, like television, may do considerably better.

Other industries will benefit from increased supplies of materials. Auto makers are in this class. The upturn has already begun. Output of cars and trucks in September showed the highest weekly average since mid-1951.

And finally, some industries won't do as well as they did this year. This includes many types of capital goods for which new orders have been slowing down lately, although no severe drop is in prospect yet. Another might be coal.

These figures do not, of course, tell the whole story on the outlook for 1953. In fact, they can conceal other developments that may ultimately prove to be much more important.

Some industries will start 1953 by producing at higher rates than they are likely to maintain over the whole year. By the end of 1953, their business may not look nearly so good as the overall figures would show. Other industries will produce more in the second half than they do in the first. Their output may stay high for another year or two.



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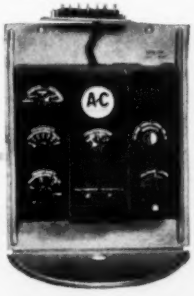

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